

0
22

Ayurveda Sukt
Volume - I

Historical Background

L. S. Singh

17-9-1992

पिण्डिकावली

अ/१६२

A TEXT-BOOK OF AYURVEDA

(AYURVEDA SIKSHA)

Dr. Shambhu Shankar Singh

Volume I—Section I

Historical Background

PRINTED AT THE
JAIN BHASKARDAY PRESS
MUMBAI

EDITED BY

Dr. A. LAKSHMI PATHI.

B. A. M. B. & C., M BHISHAGRATNA

2ND EDITION]

[1000 COPIES

ALL RIGHTS RESERVED.

(A11232 / 2017/01/01)

Volume I—Section I

Historical Background

**PRINTED AT THE
JAIN BHASKARODAYA PRESS
JAMNAGAR.**

NOTED BY

DR. A. LAKSHMI NATH

J. A. M. H. S. C. M. (JAMNAGAR)

[100 copies]

[100 copies]

AYURVEDA. SIKSHAA

(A Text-Book of Ayurveda)

Volume I.—Section I.

HISTORICAL BACKGROUND.

CONTENTS.

CHAPTER I. Right Attitude

By, Dr. A. LAKSHMI PATHI,

B. A. M. B. C. M. Bhishagratna. 1

2. The Basis of Hindu Dharma

By Sri Prof. D. S. SARMA, M. A.,

(Retired Principal Pachiappa's College,
Madras) 14

3. Universities in Ancient India with Special References to Ayurvedic Studies

By Dr. RADHAKUMUD MOOKERJEE,

M. A. Ph. D. P. R. S. Vidya Vaibhava
(Benares) Itihasa, Siromani (Baroda),
Professor and Head of the Department of
History, Lucknow University, Lucknow. 26

4. A Brief Historical Survey of Hindusthan

By Dr. A. LAKSHMI PATHI,

B. A. M. B. C. M. Bhishagratna, 68

5. History of Ayurveda

By Kaviraj M. K. MUKERJEE, B. A.

(Ayurveda Sastri, President All India
Ayurvedic Congress, Calcutta and
Bhishagwara D. NARAYANA ROW.
Madras.

257

6. Vrikshaayurveda

By Dr. A. LAKSHMI PATHI.

B. A. M, B. C. M. Bhishagratna and
GIRIJA PRASANNA MUJUMDAR,
M. Sc, Griffith Memorial Prize winner
and Professor of Botany, Presidency
College Calcutta.

361

7. Town Planning in Ancient India

By SRI R. D N SIMHNA,

B. D. M, B (Hons) F. I, A.A., A. M.T.
P. I, P. A. Director of Town Planning
Madras.

410

8. Civic Administration in Ancient India

By. Dr. A. LAKSHMI PATHI,

B. A, M.B., & C. M., BHISHAGRATNA

473

9. The Definition of Ayurved,

Its Scope, and Importance

491

10. Ayurveda in The Andhra State,

542

ĀYURVEDA SIKSHĀ.

A Text -- Book of Aayurveda.

THE HISTORICAL BACK—GROUND

CONTENTS.

CHAPTER 1.

Right attitude 1

1. Scientific out look of Aayurveda 2
2. Development of mind factor. Yoga 3
3. Tridosha Siddhanta 4
4. Safety 4
5. Adaptability 4
6. Chepness 4
7. Instinct for Research 5
8. Aids to Drugless Treatment 5
9. Good conduct 5
10. Service to Humanity 6
- Combination of Eastern and Western Systems of Medicine 6
- Division of the Subjects 9
- Courses of Study 108

Chapter 2.

THE BASIS OF HINDU DHARMA.

- The Hindu Culture—A statue without Joints 14
- Brahman—The Ultimate Reality 15
- The four Classes of Living Beings 15

Evolution of the Universe 16

Spiritual Progression

on a Vast Scale 17

Righteousness—the Test of Civilization 18

The Four Ages of Man 19

Moral and Material Standards 19

The four Classes in an Ideal Society 20

The four Stages of Life 21

The Four Ends of Life 22

Trigunas and Trigunateela 22

The Four Stages of Consciousness 22

The Four Grades of Individual Soul 23

The Four Letters, The Pranava 23

The Four Grades of World Soul 24

The Law of Spiritual Progression—The living Rock of Hindu Dharma 24

Chapter 3.

UNIVERSITIES IN ANCIENT INDIA With Special Reference To Ayurvedic Studies.

[I]

Mass Production in Education 27

Personal Relationship between

Pupil and Preceptor 28

Forest, the Fountain head

of all Civilization 29

Domestic India 30

Brahmacharya-A Biological

Process of Growth 30

Congregational Worship 31

[II]

Collectivism. Organisation

and Conferences 32

Travelling Schools 34

[III]

Congregational Education

in Buddhistic System 34

[IV]

Universities 36

Foreign Scholars at Nalanda 37

A Residential University 38

Individual Treatment

Adhered to 39

Other Countries in fluenced

by Indian Thought 40

[V]

Medical Education 41

Ayurvedic Upanayana "

Period of Probation 43

Many Branches of Study 44

Proficiency in both Theory
and Practice Essential 44

Qualifications of a Physician 45

Four Accessories for

Treatment "

The Nurse 46

Quality of Medicine 46

The Patient Himself 47

List of Diseases in

Atharva Veda 47

Ashtadhyayi—of Panini 48

Arthasastra of Kautilya 49

Rules for the Practice

of Physicians "

Classes of Practitioners "

Hospitals and Medical Stores 50

Outbreaks of Epidemics 50

Rats as Carriers of Infection "

Sanitary Regulations 51

Buddhist Texts 51

List of Medicines 52

Surgical Treatment "

Jeevaka-Buddha's Physician 53

Taxila-Centre of medical

Education "

Antiseptics in Surgery 57

Teachers of Ayurveda &
Medical Practice 59

Ancient Indian Hospitals. 62

Medical Studies in.

General Education 64

Syllabus of Medical Studies 66**Chapter 4.****THE BRIEF HISTORICAL
SURVEY OF HINDUS-
THAN.****Aayurveda-Positive Test of
Hindu civilization 68****Aayurveda—The Top
Science 69****Bharata Khanda 70****Periods of History 70****1. PURAATANA YUGA.****2. AARYA YUGA.****Houses 72****Bath—rooms and Drainage 73****Temples 73****Hospitals 74****Human Figures 74****Engravings and Seals 74****Centre of Civilization 76****Commercial Intercourse 77****The Cradle of the****Human race 77****Descent of the Dravadians 79****Hindu Almanass 79****Federated States of****Hindusthan 80****Sanskrit Language—A****Unifying force 83****Political Structure of****Hindustan 84****Pancha Dravidas and****Pancha Gaudas 84****Religion 85****The Vedas 87****Culture of the Upanishads 88****Aayurveda in the Vedas 90****3. BAUDDHA YUGA.****Bauddha Yuga 91****The Mauryan Empire 92****The Andhra Empire ..****Vedangas 94 (1)****Sootras 94****Gotras 95****Panini 95****The Smrities 96 (2)****Saustana Dharma 97****Culture of the Smritis 98****Evolution Theory 98****Social Organisation 99****Varnasrama Dharma 101****Matsya Nyaya (The Logic
of the Fish) 101****Hypergameous Marriages 102****Aayurveda in the Smritis 103****The Epics 105 (3)****Culture of Ramayana 105****Military Equipments 106****Democratic Institutions 107****Scope and Importance
of Education 109****Many Sided Nature of****Sacrifices (Yajnas 110****Re-distribution of Riches 111****Conclusion 113****Mahabharata 115**

- The date of Yudhistira's
 Reign 115
 Bharata & Mahabharata 116
 Democratic and Republi-
 can Institutions 117
 Army 117
 Navy 117
 The Laws of Warfare 117
 Medical and Surgical Aid
 during War 118
 Status of Women ..
 Religion in Mahabharata 119
 The Law of Karma ..
 Bhakti ..
 Sri Krishna and Arjuna 120
 Golden Age ..
 - himsa and the spirit of
 Toleration 123
 Aayurveda in the Epics 124
 Age of Revolt 124 (4)
 Buddhism—Jainism 125
 Bhagavata Religion 127
 Saivism ..
 Buddhism 128
 Jainism 129
 Buddhism and Jainism—
 Branches of Hinduism 131
 Decline of Buddhism ..
 Aayurveda in Buddha
 Yuga 133
 4. PAURAANIKA YUGA.
 Pauranika Yuga 134
 The Darsanas 135
- The Puranas 135
 Upapuranas 137
 Pramanas in Puranas 137
 The chief Characteristics
 of the Puranas 137
 Hindu Calculation of time 138
 History in the Puranas 139
 Yoga in the Puranas ..
 One Divinity in Trinity ..
 Short Summaries of
 Some Puranas 140
 Padma Purana ..
 Vishnu Purana .. 142
 Brahma-vaivarta Purana ..
 Vayu Purana 143
 Agni Purana ..
 Permanant value of
 the Puranas 144
 Evolution of Synthetic
 Hinduism ..
 Smartas and Vaishnavas 146
 Vikramaditya, the Patron
 of Literature ..
 Sāiva Saints in the South 147
 Kumarilabhatta ..
 Sankaracharya 148
 Disunion in the Country 149
 Aayurveda in the Pauranika
 Yuga 150
 5. BHAKTI YUGA
 Islamic Culture 152
 First Invasion by the Arabs 153
 The Sultans of Delhi 156

Religious preachings of
 Islam 157
 The Value of Prayers 159
 The Use of Japa in Yoga 162
 Asamprajnata Samadhi 163
 Sufism 163
 The age of Akbar 166
 Sikhism 167 [2]
 Zeroastrianism 171 [3]
 Zorathushtra 172
 Exodus of the Parsis into
 Hindusthan 173
 Christiaaity 174 [4]
 Fundamentals of Christian
 Beliefs 174
 The Holy Bible and Hindu
 Scriptures 177
 Sermon on the Mount 179
 Char!ty, Renunciation
 and Faith 180
 Spread of Christianity
 in Hindustan 181
 Religions Sects of the
 Hindus 18
 Saivism 181
 Veera Saivas 183
 The Saktas 183
 Vaishnavism 185
 The Bhagavata System 185
 Alwars 185
 Andal 186
 Acharya 187
 Ramanujacharya 187

Pancharatra System 188 [2]
 Radhakrishna cult 189
 Nimbarka 191
 Madhva Charya 192
 Ramanand 193
 Vallabhacharya 194
 Chaitanya 195
 Namadeva 198
 Kabir 198
 Suradas 199
 The Yogi Panth 199
 Ravidas, Jhali, Mira Bai 200
 Tulsidas 200
 Literature in Mediseval 200
 India [5]
 Amir Khusrau 201
 Badru-ud-din 201
 Historical Prose 201
 Philosophical Literature 203
 Influence of Sanskrit 204
 Medical Literature under
 Muslim Influence 204
 Hindu Literature 204
 Jayadeva's Geeta Govinda 205
 Rupa Goswami 206
 Dharma Sastras 206
 Sayana and Madhava
 charya 207
 Jain Writers 207
 Influence of Bhakti
 movement 207
 United and Prosperous
 India 208

Synthesis of Hindusim 208

Imperial Unity 209

Administration 209

Economic Condition 210

Hindu Genius 211

Valour of the Hindus 211

Conclusion 212

Aayurveda in Bhakti

Yuga 214

AADHUNIKA YUGA 6

Kaliyuga 219

Cause of Wars 219

Adharma 220

The Socio Philosophical 221

Basis of Hinduism 221

Fall of the Intellectuals 223

Structure of the Body

Politic 224

Varna Sankara 225

Mutilation of the Body

Politic 226

The Illusion Passes away 226

Ragadi Diseases 228

Swami Vivekananda

His Life 228

Vedanta, the Science of

Truth 230

Parliament of Religions

Chicago 232

REFORM MOVEMENTS

The Brahma Samaj 233

Arya Samaj 234

Theosophical Society 236

National Renaissance 237

Sciences and Arts in 239

Hindustan, their Object 239

Education Round the

Craft 240

Thirty Two Sciences 240

Sixtyfour Kalas 240

Special Education for

Girls in India 241

Anga Kalas (Essential

Arts). 241

Glass Industry at

Takshasila 245

Aayurveda, as a Domestic

Art 246

Hindu Dharma and

Greater India 247

The Art of Navigation 247

Religion As a Science 248

The Advent of Satya-

Yuga 251

Hindusthan to Lead the

World again 254

Chapter V.

HISTORY OF

AAYURVEDA,

Introduction 257

Periods in the History of

Aayurveda 258

II]

The Vaidika Yuga

Vedas 259

Aayurveda an Upa-Veda

Reference to Tridhatus	261
Anatomical References	..
The Process of Metabolism	264
References to Bacteriology	266
Sex differentiation in	
Parasites	..
Yukti Vyapasyaya in the	
Vedas	267
Some Drugs and their uses	
in the Vedas	268
Soma, the king of Plants	269
A List of Drugs in the	
Vedas	270
Takman, the Malarial fever	..
Reference to Light and	
Chromotherapy	..
Hydrotherapy	271
Surgery	272
Midwifery	..
Daivavyapaasraya Chikitsa-	
Treatment by Faith	273
Spells and Amulets.	
(Mantras and Manis)	..
Medicine as Profession	274
Three Classes of	
Practitioners	275
Aayurveda and the Vedas	..

[II]

THE SAMHITA YUGA OR THE PERIOD OF COMPITATIONS.

Samhitayuga	277
Traditional Genesis of	
Aayurveda	278
Teaceers of Aayurveda	..

Geneology of the Teachers of	
Aayurveda	279
Aayurveda is Eternal	280
Aayurveda, the most	
Auspicious	..
The Original Bulk of	
Aayurveda	..
Sthanas of Aayurveda	281
Development of Chikitsa	
into Eight branches	..
A brief list of Ancient	
Aayurvedic Works	..
Works on Kaya Chikitsa	
(General Medicine)	..
Works on Salya Chikitsa	
(General Surgery)	283
Works on Salakya Chikitsa	
(Diseases of E. N. T.)	285
Bhoota Vidya Tantras	287
Works on Mental and	
Demonical Diseases	288
Works on Kaumara-Bhritya	288
Works on Agada Chikitsa	
(Toxicology)	289
Rasayana Chikitsa	290
Works on Vajikarana	
Chikitsa	..
Pasu Chikitsa Samhitas	292
Aayurveda made an	
Upaveda	293
The Name Aayurveda	..
Anatomy	295
Embryology	297
Physiology	..
Materia Medical	298

Pharmacy 298	Benefits of Establishing
Diagnosis 299	Free Hospitals 313
Surgery ..	Patronage of The Caliphate 314
Surgical Instruments, 300	The School of Chemists ..
Operations ..	India's Contribution to
Medical Treatment 302	Chemical Knowledge 315
Training of Practitioners ..	Alberuni's Evidence ..
Midwifery 304	Nagarjana 316
Hygiene ..	Equipment of a Chemical
Eugenics 305	Laboratory 319
Medical Profession	Expert Knowledge in
Organised ..	Metallurgy 320
Medical Registration 306	Chemistry in Modern India 323
Medical Ethics ..	[V]
Medical Conferences ..	The Mahammadeeya Yuga
Specialists 307	Influence of Vernaculars 324
Quacks ..	Names of Authors and
Hospital Buildings and	their Works of this
Childrens' Wards ..	Period ..
Universal Education	Some Edicts 327
in Medicine ..	[VI]
The Four Purushardhas	AANGLA YUGA.
or Aspirations in Life 308	Progress of Aayurveda 329
Development of Aayurveda	in Recent Years
in South India	Institutions of Aayurveda 329
(Agasthya Sampradaya, .)	Sir Pardy Lukis
[III]	Eulogisation 329
BAUDDHA YUGA.	Summary and Conclusions
Establishment of Free	of the Report of the
Hospitals 310	Committee 331
Spread of Hindu Medicine	Pandit K. G. Natesa
to Foreign Countries 311	Sastris Note 335
[IV]	All India Aayurvedic
PAURAANIKA YUGA	Congress 338
Propagation of Aayurveda	Aims and objects of the
through Puranas 312	A. I. A. Congress 338

List of the Presidents of the Annual Sessions of the All India Ayur- vedic Congress 340	
Reputed Ayurvedic and 343	
Unani Practitioners	
Government Institutions 343	
1. Research Institutions 344	
2. Ayurvedic Educational Institutions 344	
3. Register of Indigenous 345	
Medical Practitioners	
Indian National Congress 345	
All India Ayurvedic Vidyapetha 347	
Private Agencies 348	
A Text Book of Ayurveda 345	
The Spirit of Ayurveda 349	
Medical Ethics in Ayurveda 350	
Conclusion 351	
Reference Books in English 353	
Books in Sanskrit 356	
CHAPTER 6.	
VRIKSHAAYURVEDA	
Introduction 362	
I	
EXTRACTS FROM THE TEXTS OF	
VRIKSHAYURVEDA.	
Senses in Plants 365	
Advantages of Growing Trees 366	

Selection and Location of Trees 366
Auspicious 367
Insuspicious 367
Importance of Tree- Planting 368
Classification of Lands Suitable for Tree Planting. 368
Classification of Plants 369
Green Manure 370
Special Preparation of the Seed 371
Seed Bed 371
Pits for Planting Trees 371
Best Time for Growing Seeds 372
Time for Watering Plants 373
Artificial Liquid Manure 373
Jasmin to flower at odd Seasons 375
Artificially Increasing Seed of flowers 375
Feats of Magic with Plant Life 375
Cross Grafting 376
Recipe for producing Red and Indigo coloured Cotton 376
To Produce untimely Fruit and Flower 377
To Produce Seeds Fruit 377
Vata. Pitta Kapha Constitution 377
Diagnosis of Diseases 378

General Principles of	
Treatment of Plants	379
Disinfectant Recipe	380
Treatment for Burns	380
Treatment for a Wind-	
Falien Tree	380
Treatment for a Tree	
struck by Lightning	380
Treatment for Old Age	381
Sap Letting Like	
Blood Letting	381
Symptoms of Indigestion	381
Wasting Diseases in Plants	381
Cooling and Heating	
Treatment for Plants	381
Extracts from Other Texts	382
Siranveshana	383
Silabhedanam	383
Jala Rasa Jnanam- Durjalasya	
Surasa Sugandhree Karanam	383
Tatakadeenam Rakshanam	383
Annadi Vritti	383

[II]

STUDY OF BOTANY FROM THE VEDIC PERIOD DOWN TO THE GUPTA PERIOD.

Morphology (Aakritig	(1)
nanal) Descriptive Botany	384
Germination	385
Mula—Root	386
Tula or Vistara—Stem	386
Parna—Leaf	386
Pushpa—Flower	387
Pbala—Fruits	387

Beeja—Seed	388
Internal Morphology or Gross	
Anatomy (Antarnirmana)	389 (2)
Physiology. (Vyapara)	389 (3)
Circulation of Sap	390
Exudation of S p (Rasasrut)	390
Growth	390
Movements	390
Consciousness	391
Reproduction and Sexuality	391
Ecology	392 (4)
Nomenclature (Taxonomy)	392 (5)
Classification	393
Botanical	394
Medicinal	"
Dietetic	395
Plants and Evolution	" (6)
Heredity	396 (7)
Plant Pathology	" (8)
Botanical Marvels	397 (9)
Botany and Allied	(10)
Sciences	398
III MADHYA VUGA	399
IV MODERN BOTANY	
The Second Period	403
Economic Botany	405
Palaeobotany	"
Indian Universities	406
Bibliography	409
Chapter VII.	
TOWN PLANNING IN	
ANCIENT INDIA	
Religious and Ethical	[I]
Basis	411
Vastu Vidya	412

Vastu Purusha	413
Viswakarma	414
Civic Administration	415
The Aid of Experts	416
Live Common Life for a Noble End	418
Vastu-The Indian Science of Town Planning and Buildings	419
Home a Visible Symbol of National Life	420
The Spirituality and Purity of the Race	421
Dedication to Vastu Purusha	422
Divisions with Padas or Parts ..	
Religious Rights	423
The Planning of Dwarka by Srikrishna ..	
Tutelary Deity of the Town	424
Auspicious Days and Months ..	
[II]	
Classification of Sites	426
Classification of Soils ..	
Testing the Soil	428
Main Roads and Streets ..	
Slope of the Ground	433
Characterness of Human Habitations	434
Asokas Edict regarding Tree Planting	436
Prevention of Rapid Withdrawal of Moisture	437

First Plant Trees-Then Erect Premises	437
---------------------------------------	-----

[III]

Site Planning and Building Principles	438
Plan of a House with Accessory Buildings	442
(Upakarana Gruhani)	442
Conclusion	446
Description of Typical Cities of Ancient India	447
(1) Ayodhya	447
(2) Hastinapuri	448
(3) Indraprastha	449
(4) Pataliputra	450
(5) Takshasila ..	
Glass Industry in India	451
(6) Ellora	452
(7) Mahabalipuram	453
(8) Vijianagara	454

IV

Good Sources of Water	457
Shape of Ground	458
First Lay out Plan of Town, then of a House	459
Allocation of the Country into Units and Establishment of Villages, Towns and Cities	461
Systems of Ancient Town Planning	462

Characteristics of a Village and the distinction between Village and Town or City	466
Classification of Towns From Military Consi- derations	471
Chief Objects of Town Planning	472
Important Items in Town Planning	474
Our Places of Pilgrimage Are Health Resorts	477

Chapter VIII.

CIVIC ADMINISTRATION IN ANCIENT INDIA.

Civic Administration in Ancient India	473
Ideal of Peace and Prosperity	474
Adharama, The Fore most Cause of Disease	474
The Three Agencies	475
Municipal Boards	477

Village As ociations	479
Village. The Unit of Government	479
Proverbial Prosperity of Ancient Hindusthan	480
Development of Medicine In Asoka's Time	482
Labour Room	483
Children's Apartments	483
Attendants in a Hospital	484
Nurses	484
Utensils and Clothing	485
Instruments	486
Diet and Medicine	486
Hospitals in South India	487
Learn Even From an Enemy	488

Chapter IX

The definition of Ayurveda in Scope as Impotence	491
---	-----

Chapter X

Ayurveda in the Andhra State	533
---------------------------------	-----

EDITOR'S APPEAL

The Western Outlook

Even when I was a student of the second year in the Medical College, in 1907, I published my first book on Biology (Jeevasastra in Telugu) in the Vignana Chandrika Series. My books on Cholera, Malaria, Infectious Diseases, Care of Infant, Asti Panjara (Osteology) quickly followed. These books were written by me with a merely western outlook. As I did not know anything of Ayurveda at that time, I used to ridicule the habits and customs of our countrymen whenever an opportunity arose, without understanding their real value. Subsequently, I felt ashamed of these writings of mine, after I began to study Ayurveda. I, therefore, did not wish to reprint any of these books as I found that they represented only one side of the respective subjects and as such, were unsuitable to our conditions.

The Importance of the Basic Sciences

Further, even though many friends pressed me to publish some books on Ayurveda, I could not undertake such work because my knowledge of the Basic Indian Sciences, on which Ayurveda was founded, was very poor. I found these sciences to be so vast and unfathomable, that I took many years to grasp their essentials. But, as I had always an intense desire to publish a Text-Book of Ayurveda on the lines of English Text-Books, and according to the curriculum laid down by the All India Ayurveda Maha Mandali, I started to learn the Basic Sciences of India from the Vedas, the Upanishads, the Bhagavatgeeta, the Darśanas or the systems of Indian Philosophy, Astronomy, Kama Sastra, Artha Sastras, and the Dharma Sastras at the feet of learned scholars and specialists. I studied many books, attended many Conferences and Parishads and during the last 10 or 12 years endeavoured tenaciously to secure the knowledge that was necessary for mastering this great Science of Ayurveda.

The Knowledge of the Modern Sciences

I am trying to include wherever possible as much of the knowledge of the modern sciences and as many illustrations as possible in order to make the Allopathic view-point clear and understandable to an average Ayurvedic student. I trust that all that is absolutely necessary and useful to a Medical Practitioner in India will be found in the different chapters without prejudicially affecting the *Tridhatu Siddhanta* of Ayurveda. In the treatment of diseases, I am mainly drawing from my own experience and where recipes that were not personally tested by me are given, I have taken care to mention the authority upon which I based my observations. Many reputed Ayurvedic Physicians are helping me in the preparation of the manuscripts of this book and my heart-felt thanks are due to all of them.

Presentation to Mahatma Gandhi

A gist of this book was compiled in ten lectures which were presented to Mahatma Gandhi after evening prayers on 16th October 1939 as Wardha Lectures and were cheerfully accepted by him. These ten lectures have now been enlarged into this Text-Book of Ayurveda in 8 Volumes.

I am grateful to Mahatma Gandhi for the great enlightenment that I received from his company at Sevagram Asramam and I hope that this humble contribution of mine will help the village reconstruction programme which is so very dear to him.

I also feel glad that I could complete the printing of the first Volume of Ayurveda Siksha now, so as to be able to make a presentation of it to him as a Birth-day Gift on his attainment of his 75th birth-day.

The English Edition

In order that this book may be useful not only in India but also to students of medicine in foreign countries, I wanted to publish this book in English first; but, when I found that no imported medicines were available in India on account of the

World War. I thought that the publication of the book in the Indian languages at once would be of immediate advantage to our people living in the villages, where medical aid is most needed and to the Village Physician who has no access to modern advances in medical literature and, I therefore, decided to publish this book first in my own Telugu (Andhra) language and this is being done in advance of the English publication. I have therefore the advantage of preparing the subject matter and of reviewing it again before the English publication goes to the Press.

The difficulty of obtaining the necessary paper has been a great obstacle. Space has been however allotted to each heading with due consideration of the importance of the subject and with the definite object of teaching as much as possible the Fundamental Principles of Ayurveda, upon which the whole success of the practice of this system depends. It is hoped that this book will help the students to study with interest the text-books of original authors like Charaka and Susruta. It is not intended that this book should be a substitute for them but only a guide for their study.

Attempts are being made to publish the whole book in Sanskrit. The first two sections, Bharateeya Vignanam and Darsanas are getting ready for the Press. It is earnestly hoped that this Text-book of Ayurveda will be eventually published in all the Indian Languages.

An Appeal for Support.

I hope that all students of Ayurveda and practitioners of both the Ayurvedic and the Allopathic systems will see that a copy of this book is available in their libraries. I appeal to all lovers of Ayurveda to encourage the publication of this book by payments in advance for copies of the book to be supplied to them immediately after publication.

BEZWADA,

A. Lakshmi Pathi,

2-10-44.

B. A. M. B. & C. M.,

BHISHAGRATNA.

PREFACE.

To the First Edition.

I have found that for acquiring an accurate knowledge of Ayurveda, the student should undergo a Course of Pre-Medical Studies in the Indian Method, which give him a proper estimate of the Historical and Philosophical Back-ground necessary for the correct understanding of the subject. It is for that purpose I have devoted two sections in the first Volume namely 1. Bharateeya Vignana or The Historical Back-ground and 2. The Darsanas or The Philosophical Back-ground.

As I have no claim for any originality in these subjects, I have freely borrowed from reputed authors and have acknowledged my indebtedness to them in different places. Some of the chapters were wholly contributed by distinguished scholars to whom I owe a deep debt of gratitude.

Ayurveda as the Science of Life is an International Subject and I hope one day, the Indian System of Medicine which is the Parent of all Systems of Medicine in the world will be studied with the reverence that it deserves as a scientific subject. It is a Science—the Science of Sciences—which ends all jealousies between individuals and wars between nations and bestows everlasting Peace on Humanity.

Om Tat Sat.

Circus maidan,
Governorpet,
Bezwarda,
2-10-1944,

Dr. A. Lakshmi Pathi,
B A., M. B. & C M., Bhishagrajna,
EDITOR.

General Chronological Dates and Events in the Historical Background

WITH SPECIAL REFERENCE TO AYURVEDA.

Since Creation—50,000 B. C. Puratana Yuga.

200,00,00,000 Age of Creation according to Modern Zoologists

195,58,85,043 Age of Creation according to Hindu Calendar

500,000 to 50,000 B. C. Existence of Man in Hindustan

50,000 to 1,000 B. C. Aarya Yuga

50,000 B. C. (Earlier than) Age of Rigveda

? Ramayana War

? Mahabharata War

3,451 B. C. Yudhishtira

3,100 B. C. Commencement of Kaliyuga

2,500 to 500 B. C. Samhita Yuga. Many Ayurvedic Samhitas were compiled

1,000 B. C. Compilation of Epics and some Puranas.

750 B. C. Panini-Ashtadhyayi

623 B. C. Birth of Gautama Buddha

599 B. C. Birth of Vardhamana Mahaveera

588 B. C. Nirvana of Buddha

Jeevaka, the greatest Physician and Surgeon of his time—a contemporary of Buddha.

500 B. C. Baudhayana

400—200 B. C. The Darsanas formulated.

327 to 297 B. C. Chandra Gupta's reign. Artha sastra was compiled by Kautilya. Hospitals were opened and sanitary regulations were promulgated. A Register of births and deaths created and Medical Profession was organised

- on, sound and ethical principles, Magasthenes (300 B. C.) visited India, 270 to 230 B. C. Asoka's reign. Ayurveda developed on all hands. A state pharmacy was opened, Free Hospitals and poor rest houses were opened for men and beasts. Ayurveda spread to foreign lands through the Buddhist monks.
- 100 to 0 B. C. ? Nagarjuna redacts Susruta Samhita ? 0 B. C. to 130 A. D. Spread of Christianity in Hindustan, 120—150 A. D. Kanishka's reign. Charaka redacts Agnivesa Samhita, 300 to 1,000 A. D. Pauranika Yuga. Decline of Jainism and Buddhism and rise of Vedic religion.
- 400 to 500 A. D. Dridhabala redacts again Agnivesa Samhita already redacted by Charaka and completes the portions unredacted by Charaka, Mahabharata completed, Vriddha Vagbhata compiles Ashtanga Sangraha, Fa-Hien visits India.
- 525 to 583 A. D. Vikramaditya's reign, Dhanvantari the Court physician and one of the nine gems compiled Dhanvantari Nigantu, Amarasingha compiled Amarakosa, the lexicon Kumarilabhata.
- 600— A. D. Revival of Saivism—Sankaracharya and Saiva saints
- 606 to 646 A. D. Sriharsha's reign.
- 629 to 645 A. D. Yuan Chwang's stay in India.
- 636 A. D. First, invasion of the Arabs
- 675 to 685 A. D. L. Tsings stay in India
- 7th Century A. D. Jaijjatacharya wrote commentaries on Charaka and Susruta Samhitas

- 785 A. D. Harun All Rashid's reign at Bagdad, Manka translated Ayurvedic toxicology into Persian.
- 931 A. D. Bhattaraka Harichandra redacted Kharanada samhita
- 1000 A. D. Bhaskara Bhatta wrote Sareera Padmini, a book on Ayurvedic Anatomy
- 1016 A. D. Ramanujacharya.
- 1017-1030 A. D. Alberunis, stay in India
- 1040 Chakrapani wrote Commentaries on Charaka and Susruta. During this century Brinda wrote Brinda Madhava. Dalhana wrote Nibandha Sangraha a commentary on Susruta Samhita.
- 1050 A. D. Gayadasa wrote on Nidana & Sareera
- 1067 A. D. Establishment of Hospitals by Veera chola Maharaja at Tirumakudal. By Ganapathi Dev at Malakapuram
- 1089 A. D. Brahmadeva.
- 1100 A. D. Vignaneswara.
- 1111 A. D. Maheswara wrote works on Nidana and Chikitsa.
- 1114 A. D. Birth of Bhaskaracharya.
- 1181 A. D. Rule of Jayavarman II over Combodia.
- 1200 A. D. Madhavacharya and Sayanacharya.
- 1220 A. D. Arunadatta wrote Saivangasundara a commentary on Ashtanga hridaya
- 1240 A. D. Vijayarakshita and Srikantha Datta wrote Madhukosa, a Commentary on Madhava Nidana.
- 1270-1350 A. D. Namadev
- 1300 A. D. Parthasaradhi Misra
- 1398 A. D. Kabir and Tulsaram. During this century only Basavarazu wrote

- Basavarajeeyam and Vallabhacharya**
wrote **Vaidya Chintamani**
- 1420 A. D.** Sarangadhara wrote his **Samhita**,
Nicoo's visit to Vizianagar.
- 1469 A. D.** Birth of **Nanak**
- 1479 A. D.** Birth of **Vallabhacharya**
- 1483-1563 A. D.** **Suradass**
- 1485-1533 A. D.** **Gouranga**
- 1520-1524 A. D.** **Domingo Paez's visit to Vixianagaram**
- 1550 A. D.** **Bhava Misra wrote Bhava Prakasa**
- 1592-1623 A. D.** **Tulasidass and Rupa Goswami**
- 1627 A. D.** **Morewarsbhat wrote Vaidyamurta**
- 1633 A. D.** **Lolambarazu wrote Lolambarajeeyam**
- 1670 A. D.** **Hastamasuri wrote Vaidya Vallabha**
- 1676 A. D.** **Yogaratanakara was written**
- 12-1-1863 A. D.** Birth of **Swami Vivekananda,**
- 11-9-1893 A. D.** **Parliament of Religions, Chicago.**
- 1875 A. D.** **Swami Dayananda Sarswati launched**
Aaryasamaj Movement at Bombay
- 1875 A. D.** **Theosophical Society founded at New York.**
- 1885 A. D.** **Indian National Congress founded.**
- 1901 A. D.** **Madras Ayurvedic College founded**
by Pandit Gopalacharlu at Madras,
- 1905 A. D.** **Boycott Movement was started,**
- 1907 A. D.** **All India Ayurvedic Conference**
founded by Sankara Dadasji Sastri Pade.
- 1909 A. D.** **All India Ayurvedic Vidya Pitha founded,**
- 17-10-1921 A. D.** **Appointment of the 1st Usman Com-**
mittee Madras.
- 1924 A. D.** **Government School of Indian Medi-**
cine opened at Madras.
- 1941 A. D.** **Ayurveda Adhyapaka Siksha Parishat**
held at Avadi (122-9-44 to 20-11-44),

AAYURVEDA SIKSHAA

(A Text-Book of Aayurveda)

IN

8 VOLUMES.

VOLUME 1.

Fundamental Principles

OF

AAYURVEDA

(Sootra Sthaanam)

CHAPTER I

Right attitude

[Contents :— Right attitude—Scientific outlook of Aayurveda - Development of mind factor, Yoga - Tridosha Siddhaantha-Safety—Adaptability—Cheapness - Instinct for research - Aids to drugless treatment—Good Conduct—Service to Humanity — Combination of the Eastern and Western Systems of Medicine—Division of Subjects—Pre-medical Studies—Medical Studies—Post-medical Studies.]

It is said that a laborious study of a dead Science like Aayurveda is a mere waste of money, energy and time, especially when a progressive and modern Science can be learnt. Some people have suggested that it is enough if we enlarge the British Pharmacopoeia by adding to it a few more indigenous drugs and that for that purpose, it is not necessary to encourage the science of Aayurveda or the physicians who practise the same.

The enlargement of the British Pharmacopoeia, would only mean the export of more raw materials from our country to be eventually repurchased by us at a much higher cost, whereas the development of the Aayurvedic system and its practitioners would mean development of our national resources. Further, it is impossible to enlarge the British Pharmacopoeia without encouraging the existing Aayurvedic physician, because we have to acquire all knowledge of drugs used in the country at present from him. The other method of conducting elaborate chemical, physiological and pharmacological experiments of a few drugs to be incorporated in some corner of the British pharmacopoeia will not only mean the expenditure of vast sums of money but also many years of research.

Although the foreign system of medicine enjoys state patronage and although patients are treated free in big hospitals, 50 p. c. of the people resort to Aayurvedic medical practitioners and a good percentage of the patients treated by them have been observed to be cured. Further, we observe that people almost always resort to some drugs available locally before they seek the advice of any physician. It only proves that the system is always alive in the minds of the people and that it breaks forth into action the moment there is any need. Aayurveda, as a system is deep-rooted in the soil.

A search for truth will reveal facts, rather astonishing. They are summarised in the following ten points.

1. Scientific outlook of Aayurveda

Aayurveda is a real science of life dealing with all its aspects. Its scope is not narrow and bound into watertight compartments as in the western system. The science

of Aayurveda includes all that is essential to make a man not only healthy but also happy. It also includes the study of all Dharma (right conduct) which is necessary for the healthy growth of the society in which the man lives. Further, it deals with the philosophical aspect of life, the knowledge of which contributes greatly to the comfort and happiness of human beings. Thus, social, religious and moral education of the individual citizen is included in the science of Aayurveda. In this manner, it is more scientific as a science of life than the western medicine.

2. Development of mind factor, Yoga

Aayurveda recognises that the mind is very powerful both in the causation and cure of diseases. Emotions like hurry, anger and pride are also treated as diseases. These affect the health, happiness and longevity of the individual. That the west has slowly begun to appreciate this factor is shown by the methods now adopted by them in some of their Health Resorts.

In the science of Yoga; which is a branch of Aayurveda there are provisions to make the human being develop powers which may took super-human to western scientists, Converting basal metals into gold, control of wild animals by mere look, allowing an elephant to walk over one's chest and suspended animation are mere minor aspects of the development of super-human powers called vibhooties acquired through the science of Yoga, These feats, which were considered impossible can be demonstrated to those who are prepared to learn at the feet of the Guru. The spiritual power of the Yogi is far superior to any other power. It can break down the atomic structure of an element setting at naught all common rules of physics and chemistry and the laws

of animal physiology so far known. It is necessary to understand the Panchabhoota Siddhaanta in order to know the subtle principles involved in these yogic powers.

3. Tridosha Siddhaanta

The Tridosha Siddhaanta gives facilities for quick diagnosis and treatment. This helps the physician to make very detailed observations at the bed-side and enables him to make an accurate diagnosis of the various types and stages of a disease. The physician is not left dependant upon elaborate laboratory experiments. There is nothing, however, which prevents him from utilising modern methods of diagnosis wherever available.

4. Safety

Medicines used in Aayurveda are comparatively safe having been tested for thousands of years. Most of them are fool-proof. The danger of using a large number of poisonous preparations of mercury and arsenic is increasing in western medicine. It is surprising that even harmless gold has been converted into dangerous compounds in the western pharmacopoea.

5. Adaptability

The Aayurvedic pharmacopoea is very elaborate & at the same time very elastic. This is its greatness. Charaka alone prescribed recipes of six hundred purgatives (book I Chap. 4) and five hundred decoctions from single drugs. An intelligent physician can make countless combinations according to his experience. This elaborate and elastic pharmacopoea is also adaptable to the individual's taste and also the customs of different provinces.

6. Cheapness

The practice of Indian Medicine works out more economically as the medicines can be prepared from materials mostly

obtained locally. Valuable domestic formulae have become a matter of common knowledge of every household. For example, the use of common plaster of ginger for head-ache or a decoction of pepper in early fever give the patient an immediate relief and also afford a consolation that the disease is not left unattended. Commercial firms with large capital are after the Indian pharmacopoeia to exploit the treasures of Indian herbs. They are now selling common Indian drugs like Isabgol in showy bottles at a high price only disguising its form for trade purposes and the qualified doctors act merely as their innocent agents.

7. Instinct for Research

Charaka advises the student to learn even from the enemies, if it helps him in the acquisition of greatness; fame, long life and prosperity. (*Vimaan* viii-6-8) The initiative for original research is thus encouraged and the student should be on the look-out for the acquisition of knowledge which can be acquired from any source.

8: Aids to Drugless Treatment

Efficient diet, harmless aids to treatment such as *Nasyam*-medication through the nasal passage, massage, and various methods of sweating (*Sweda*), regulated physical exercises, (*Vyaayam*), sun baths, fasting, and pilgrimages to natural springs and health resorts are available in *Ayurveda*. These aids remove all danger of over-drugging and of the modern treatment by injection of poisonous drugs.

9. Good Conduct

Great emphasis is laid upon the prevention of diseases by the observation of *Dharma*, rules of Good conduct, preached throughout the study of *Ayurveda*. Indian culture which rests on a pure and simple life is in danger at the present

moment on account of imitating some of the unsuitable and unhealthy habits of the westerners. The rules of good conduct (*Sadwartanam*) as taught in *Ayurveda* should be preserved if Indian culture is to thrive.

10. Service to Humanity

One of the key notes of *Ayurveda* is service to humanity and not profit. Where drugs are sold for money, the medical practitioner becomes a kind of business man and also an agent of some big pharmaceutical firm. Whereas the real *Ayurvedic* practitioner cannot help becoming a servant of the society and the Missionary of *Ayurveda*.

'Naatmaartham Naapikaamaartham Athabhoota dayaan prati.' (Ch. Chi. 1-4-57)

Selfless devotion to living creatures is the motto of *Ayurveda*.

The last but not the least important is the patriotic feeling that a study of our own Science creates in a young mind. This is very important in these days, when every country is working for its own selfish interests. The sages of India, however, always wished for the happiness of humanity as a whole, in fact, the whole of living creation and prayed for the same in their daily prayers.

*"Ahimsa praaninaam praana vardhanaanaam ntkrish-
talamam."* (*Charaka-Sutra. A 30-14.*)

Kindness to living creatures is the greatest protector of life.

Combination of Eastern and Western Systems of Medicine

I should like to quote here what has been said by an eminent *Ayurvedic* Scholar, *Kaviraj, Jogindra Naath Sen Vaidya Ratna M.A.*, of Calcutta in his Colombo address, on

the subject of the Combination of the Eastern and Western systems. "First, is the combination desired for the betterment of the Western system or for that of ours? If the former, it is beyond my province, for I am not just now advocating the cause of the European system. If the latter, we have got to consider the problem thoroughly, for, I am afraid the question is not quite so simple as it seems. There are many, at least in Bengal, who would prefer an *Ayurvedic* student to start with an English degree, such as L. M. S., M. B. or the like. Five or six years very hard labour is the minimum work that is expected of him before he has any chance of obtaining the Medical Degree. I hope you will not differ from me very much when I hold, that after undergoing the strenuous labour and after meeting the exorbitant charges in the Medical College for about six years, an average student, who has already graduated finds neither the leisure, inclination, energy nor the money, where-with to start on a fresh medical career, namely the *Ayurvedic*, extending over several years more. For, the study of *Ayurveda* is not a joke. An M. B. may derive some benefit from his previous knowledge of Anatomy, and Physiology but he has got to read, entirely anew the portions comprising Medicine, Therapeutics, Toxicology, Diagnosis, Midwifery, Treatment of women and children, *Rasayana*, *Vaajeekarana* etc., even if we leave Surgery out of account for the present. In these departments of *Ayurvedic* study, he will hardly derive any assistance from his previous Western degree, except what is of a more or less comparative value, and he will require several years more to complete his study properly. I repeat, gentlemen, that this is certainly too much to be expected of a student of the average merit and means."

"One thing more, we generally find that our first impressions are very strong and man by nature is conservative.

Once a student has had a medical knowledge through the Western method, he will, later on test the merit of *Aayurveda* according as it tallies with his science or not. The result will be that he will not only reject all portions in *Aayurveda* that will appear to him as conflicting with his former ideas, but where both equally apply, it is ten to one that he will avail himself of the Western system rather than *Aayurveda*. He will hunt up the European Pharmacopoeia for medicines, rather than the Indian. Tolerable knowledge of *Sanskrit* language and sufficient training in the six *Darsanaas* alone can give the necessary basic scientific-mindedness to a student who wishes to begin the studies of *Aayurveda*. Want of these conditions can never be made up by education in English language and Western natural sciences. They will, on the other hand, vitiate the reasoning method necessary to the study of and adopted by *Aayurveda*. Want of strong faith in *Aayurveda* will entirely vitiate his way of thinking and practice. Of course, there may and will be honorable exceptions. What we want is staunch *Aayurvedic* physicians, who have their stock of knowledge increased by the rational and supplementary study of other systems of Medicine. We want other systems to supplement and not to supplant *Aayurveda*. It would therefore be more to our purpose to educate our students thoroughly in *Aayurveda* first, and then to allow them to make comparative studies of other systems. Of course, even during the *Aayurvedic* study of Anatomy, Physiology and Surgery, they may derive help from the Western system, but they must remember that the other systems are always to supplement their National Science and never to replace it."

My remarks apply more forcibly in the branches of Diagnosis and Medicine, for the method of diagnosis in *Aayurveda* is entirely different from that of Europeans, who

have never heard of *Vaayu*, *Pitta* and *Kapha*. We must first of all master these subjects of *Ayurveda* thoroughly and then, we may go through the same in other systems also but never before."

Division of the subjects

In view of the above and the experience of the last thirty years in the modern methods of education introduced into *Ayurvedic* schools and colleges, I have come to the conclusion that there should be a revision in the methods adopted at present as well as in the courses of study.

(1) It is necessary that a student should have a tolerable knowledge of *Sanskrit* language and a correct historical outlook of the *Hindu*-civilisation.

(2) Sufficient knowledge of the fundamentals of the *Shaddarsanas (Saastras)* is essential.

(3) Detailed education in *Ayurveda*, subject by subject, or *sthaana* by *sthaana* is also necessary. The physician should also have a comprehensive knowledge of the *Ashlaan-gaas* (the eight branches of science) before he qualifies himself for practice. Although the ancient *Ayurvedic* texts are divided into so many *sthaanas*(divisions), still no one subject in its entirety is developed or treated in those respective divisions. Our main effort in this text-book will be to remove the apparent defects and to bring all the details in a particular subject under the *sthaanas* or heads allotted to different subjects.

It is not our intention that this book should serve as a substitute to the great works of classical authors like *Charaka*, *Susrut* and *Vaagbhatta*, but our attempt is to enable the student to master these texts better. Further, we shall endeavour to make use of the knowledge of the western science wherever necessary.

Courses of Study

The courses of study are divided into 1. Pre-medical, 2. Medical, and 3. Post-medical. These three will be treated in eight volumes. A person desirous of taking the course of education in *Aayurveda* must possess such preliminary literary qualifications and capacity as will enable him to easily understand the higher scientific courses of different branches of *Aayurveda*. This pre-condition is of great importance. Knowledge through his mother tongue and the *Sanskrit* language is the only natural method and as such best able to give a student the necessary background for understanding the subject. Our provincial languages are sufficiently developed to enable us to undertake education in sciences or philosophies of the world. It is only by actual teaching in these languages that further growth of the languages can be possible. Although the English education, as imparted to-day, gives a general knowledge of the present day world, it imparts a positive bias against the means and methods of understanding the old and vast science of *Aayurveda*. Many small countries whose language and population are much inferior to ours are able to teach all sciences in their own mother tongue. We must be able to do better in a vast-land of the size of a Sub-continent and with such a large population as Hindustan. *Aayurveda* teachers or professors of *Aayurveda* may however read books on western sciences to see both the view points but not students with immature minds.

VOLUME I—Soothra Sthaana: Pre-medical Studies—The Fundamental Principles of *Aayurveda*—is divided into two Sections.

SECTION I—The historical background and the evolution of the social and religious institutions of

Hindustan. This has been presented in the following chapters.

CHAPTER I—Right attitude towards *Ayurveda* and division of subjects.

CHAPTER II—Basis of Hindu Dharma, by Sri D. S. Sharma M. A., Retired Principal, Pachappa's College, Madras.

CHAPTER III—Universities in ancient India with special reference to *Ayurvedic* Study by Dr. Radha Kumud Mookerjee, Vidyaa-Vaibhava, Itihaas Siromani, M. A., Ph. D., P. R. A. S. M. L. C. Professor and head of the department of Lucknow University, Lucknow.

CHAPTER IV—A brief historical survey of Hindustan—the Society, *Varnaasrama-Dharma*, Religious, Political and Economical conditions, Arts and Sciences, Irrigation, Navigation. Colonization, The Four Aspirations of Life.

CHAPTER V—History of *Ayurveda* by Sree Kaviraj M. K. Mukerjee. B. A. *Ayurveda-Saastri*, Calcutta.

CHAPTER VI—Vaastu Saastra Town planning in ancient India by Sri R. D. N. Simham, B. E. M. E. (Hons), F. I. A. A., A. M. T. P. I., P. A. to Director, Town Planning, Madras.

SECTION II—The Evolution of Matter and Spirit and the general study of Darsanas.

CHAPTER I—Nyaaya-Vaiseshika.

CHAPTER II—Saankhya-Yoga.

CHAPTER III—Poorvameemaamsaa and Uttaramemaamsaa of Vedaanta.

CHAPTER IV—Charvaaka Darsana.

CHAPTER V—Bauddha Darsana.

CHAPTER VI—Jaina Darsana.

CHAPTER VII—Prakriti, Purusha and Pancha Mahaabhootas
by Dr. Vatve, D. C. T., C. D. F. C. (London)
Medalist, Professor Gajjar Scholar etc.,
Thakurdwar, Bombay 2.

CHAPTER VIII—Evolution by Dr. S. Soor, M. B.
Chapra (Behar).

CHAPTER IX—Lesson in Upanishads by Sri A. Kale-
swara Rao, B. A., B. L., Bezwada.

CHAPTER X—Geetaa Analysed by Tapasvi Baba-Saheb
Dr. N. S. Paranjpe, Digras, Berar. C. P.

CHAPTER XI—Padaartha Vijnaanam.

CHAPTER XII—The Hindu Conception of Matter.

VOLUME II—PRE-CLINICAL Saareera Sthaana.

SECTION I—Deha Dhaatu Vijnaana (Histology).

SECTION II—Anga Pratyanga Vijnaana—Anatomy and Phy-
siology of the Human Body.

VOLUME III—PRE-CLINICAL-Aushadha Sthaana.

SECTION I—Dravyaguna Vijnaana (Materia Medica).

SECTION II—Aushadha Vijnaana (Pharmacology).

VOLUME IV—CLINICAL—Chikitsaa Sthaana.

SECTION I—Roga Vijnaana (Pathology including diagnosis)

SECTION II—Chikitsaa (Medical treatment of all kinds).

VOLUME V—CLINICAL—Salya-Saalaakya Sthaana.

SECTION I—Salya Tantra (Surgery General).

SECTION II—Saalaakya Tantra (Surgery for Head and
Neck)

VOLUME VI—CLINICAL—Prasooti Sthaana.

SECTION I—Prasooti Tantra (Midwifery).

SECTION II—Kaumaarabhritya (Management of Children).

**VOLUME VII—POST MEDICAL—Aarogya Sthaana of Swas-
tha Vrittam (Hygiene).**

SECTION I—Aahaara Vijnaanam. (Dietetics)

**SECTION II—Rogaanutpaadanam (Prevention of disease).
Personal, Social and Civic Hygiene and
Municipal Administration.**

VOLUME VIII—POST-MEDICAL—Uttara Sthaana.

SECTION I—Vyavahaaraa Tantra—Medical Jurisprudence.

SECTION II—Agada Tantra—Toxicology.

SECTION 1

The Historical Back ground.

CHAPTER 2

The Basis of Hindu Dharma

BY

Sri D. S. SARMA, M. A.

(Retired Principal, Pacheappa's College, Madras.)

[CONTENTS:—The Basis of Hindu Dharma. The Hindu Culture, A statue without joints—Brahman, the Ultimate Reality—The Four Classes of living beings—Evolution of the Universe—Spiritual progression on vast scale—Righteousness, the Test of Civilizations—The Four Ages of Man—Moral and Material Standards—The Four Classes in an Ideal Society—The four stages of life—The four ends of life—Trigunaas and Trigunaateeta—The four states of consciousness—The four grades of Individual Soul—The four letters, the Pranava—The four grades of World Soul—The Law of Spiritual Progression—The Living Rock of Hinduism.]

The Hindu Culture—A Statue without joints.

Hindu Culture is like a statue carved out of a single rock. There are no artificial joints in it, no detachable pieces. Its sciences and arts, its metaphysics and ethics, its politics and economics are all of a piece. The same *spirit* animates the whole as well as the parts. Here religion is not divorced

from science. nor morality from art, nor psychology from physiology. Here the medical man does not look upon his patient as a mere *body*, any more than the *Guru* looks upon his *chela* as a mere *spirit*. Both the man of science and the man of religion look upon an individual as a complex unity of *body*, *mind* and *spirit*. Both take the same view of life, both cherish the same ideals and both point to the same goal. Hence *Ayurveda* is regarded as part of the *Veda*. The science of life is part of the Science of *Spirit*, as our ethics is part of our metaphysics.

Brahman--The Ultimate Reality

Therefore, the basis of *Hindu Dharma* is the *Hindu* view of the universe which is clearly given in one of our *Upanishads*. In the *Taittiriya Upanishad*, we are told that *Bhrigu*, the son of *Varuna* approached his father and requested him to teach *Brahman* or the ultimate Reality. The father gave his son a formula and asked him to go and meditate on it, and come to his own conclusion. The formula was:—"That from which all beings are born, that by which, when born, they live, that into which they enter when they pass away—know that, for, that is *Brahman*."

The Four Classes of living beings.

Bhrigu went and meditated and came to the conclusion that *Annam* or matter was *Brahman*, because all beings are born from *matter*, they live by *matter* and they finally dissolve into *matter*. He returned to his father and told him his conclusion. But his father asked him to go and meditate again. *Bhrigu* meditated again and came to the conclusion that *Praana* or life was *Brahman*, for *Praana* was a higher category than *Annam*. He went to his father and told him his

conclusion, but his father asked him to go and meditate again. Then in successive stages *Bhrigu* discovered for himself that *Manas* or consciousness, *Vijnaanam* or self-consciousness and finally *Aananda* or bliss or universal consciousness would satisfy the definition of *Brahman* that his father had given him. He had started with the lowest category of *matter* and reached the highest category of *spirit* viz., *Aananda* or universal consciousness or bliss.

Evolution of the Universe

Thus the successive stages in the evolution of the universe, according to the *Upanishad* are—*matter*, *life*, *consciousness* *self-consciousness* and *universal consciousness*. To put them more concretely, the stages are—*minerals*, *animals* *men* and *God*. At one end of the ladder, we have pure *matter* in which *spirit* is dormant, and at the other end, we have pure *spirit* in which *matter* is dormant. Between these two extremes, we have beings composed both of *matter* and *spirit*. Only, as we ascend the scale of being, *spirit* becomes richer and *matter* becomes poorer. From minerals to plants, from plants to animals, from animals to man, from bad men to good men and from good men to God—the evolution in *spirit* is obvious. Corresponding to the waxing in *spirit* there is waning in *matter*. Therefore, according to this view, the whole universe is an amphitheatre in which there is a long-drawn conflict between *spirit* and *matter*, between, *Aatman* and *Anaatman*, at various levels of existence. And the conflict has resulted on this earth in various classes of beings in an ascending order of *spirit*. In other words, just as we speak of arithmetical progression and geometrical progression in mathematics, we may speak of spiritual progression in creation. But we witness only the intermediate stages, not the begin-

ning or the end of this progression. For, the beginning and the end of creation are beyond time. As the Geetaa says :-

“Mysterious is the origin of beings. Manifest is their intermediate stage, *O Arjuna*, and mysterious, again is their end.” Ch. II-28.

Spiritual Progression on a Vast Scale.

Our cosmic time is a narrow bridge between two eternities. No creature can ever know how the *primal spirit*, the Absolute, came to divide itself into subject, and object, into *Aatman* and *Anaatman*, and started the process of evolution, nor how the divided *spirit* will again be restored to its original wholeness, when every particle of dust in the universe will be reclaimed to God. All that we can know is that there is a process of spiritual progression on a vast scale going on within the limits of our space and time, and that it should set the standard for all our schemes and plans in the world. Accordingly any scheme or plan designed by us to enhance the spiritual values in the world and set them above merely biological values or material values in accordance with the divine purpose and any scheme which reverses the order of these values goes contrary to the divine plan. It is necessary for us to keep this formula of spiritual progression ever before our minds. It is the master-key which will open every lock. With its aid we can solve, for instance, those four vexed problems in religious philosophy—viz., the problems about God and His creation, and man and his salvation. God, according to this view, is the consummation of all spiritual values we are aware of. He is the goal as well as the starting point of this evolving universe. He is not a person sitting far away in the clouds threatening to judge all mankind on a final

judgement day when the world comes to an end, but the eternal *spirit*, who by seeming to sunder himself into two, started the process of creation by which dual beings composed of *matter* and *spirit* in varying proportions have come into existence and are struggling their way back to their original home. He is the supreme Reality compared with which we and our congeners are only fleeting shadows. We see gleams of Him around us and within us in the shape of spiritual values like goodness, beauty and truth. Therefore the more we appreciate and acquire these qualities and make them prevail in the world, the more do we know Him and the more do we become like Him. Man is, no doubt, a dual being, having God as his father and Nature as his mother. But he is the highest creature in the visible world and unlike animals and plants, his younger brothers and sisters, he has a will of his own by which he can make or mar himself. His salvation lies in his exercising his will and subordinating the lower values of *matter* and life to the higher values of *spirit* and thus steadily growing divine.

Righteousness-the Test of Civilization.

The formula of spiritual progression given in the *Upanishad* not only enables us to solve the four fundamental problems of religious philosophy and thus provides us with a principle by which we can order our lives but also makes us understand the whole edifice of Hindu civilization which has been raised on it. Take, for instance, the Hindu view of history and of the progress of nations. The Hindu achievement in the field of historical writing is admittedly poor. We have produced no great historians. But our ancients had a correct view of history. They had a correct standard for judging the value of civilizations.

The four Ages of Man.

In their view that age in the history of man, in which moral and spiritual values were well established, or, as they picturesquely put it, the Cow of *Dharma* walked on four legs, was the golden age of civilization. They called it *Krita-yuga*. And the ages which fell away from it, the ages in which the Cow of *Dharma* limped on three legs or two legs or one leg, were ages of inferior civilizations, whatever their achievement may have been in other directions.

Moral and Material Standards

So they judged the greatness of nations not by the empires they possessed or the wealth they accumulated or the knowledge they gained but by the degree of righteousness they cultivated. This view is nowhere better exemplified than in our epics—the *Raamaayana* and the *Mahaabhaarat*. There is no doubt that the civilization of *Lanka* was richer in the lower values of wealth, power, skill and scientific knowledge than the civilization of *Ayodhya*. That *Raavana* had aeroplanes, which Rama had not, is symbolic of the entire contrast between the two civilizations. Similarly, *Duryodhana* and his brothers were far richer, far more powerful and far more ingenious than poor *Yudhisthira* and his brothers. And yet, we know where the sympathies of *Vaalmiki* and *Vyaasa* lay. Their whole aim is, as it were, to tell the nation "Look at this picture and that. Compare these two opposing civilizations—wealth and power, skill and scientific knowledge on one side, virtue and humility, patience and an unwearied endeavour to know and do what is right on the other. Which would you choose? Which side would you wish victory?" *Vaalmiki* and *Vyaasa* are our great nation-builders. They laid the foundations of our civilization

in accordance with the law of *Spirit* revealed in the *Vedas*. The ideals that they set before us are still the dominant influences of our lives. Their whole teaching is that man's true progress is to be judged by moral and spiritual standard and not by material or scientific standards. *Dharma* is the supreme standard of life. It is the test we have to apply to all civilizations.

The Four Classes in an Ideal Society.

In accordance with this principle our nation builders and law givers tried to construct an ideal society in which men should be ranked according to their spiritual progress, and not according to their power or wealth or numerical strength. Numbers, wealth and power are distinctly to be subordinated to virtue and character. That is the principle of our so-called *Varna-dharma*. It should be borne in mind that our *Varna-dharma* was only an ideal. At no time in our history, as judged by authentic records, did it ever correspond to actual facts. For at no time have we had the four simple castes postulated by *Varna-dharma* and represented by the simple diagram of four horizontal lines. We have always had a bewildering complexity of castes and sub-castes with numerous overlappings and confusing cross-divisions due to various historical causes like conquests, migrations, professions, inter-marriages, illegal unions, ex-communications and so on. So, if we want to represent facts correctly, we have to employ not a simple diagram of four horizontal lines but a complex figure of innumerable intersecting circles like the figure employed by modern linguists for representing related languages. The fact is that the four *Varnas* were only an ideal like the four *Yugas* embodying the principle of spiritual progress. Between this ideal and the actual caste system in our

country, there stretched an ever-widening gulf, as birth and not character became the criterion of status in society. Our duty now is not to defend the indefensible caste system; but to recognize the principle that according to *Hindu Dharma* in an ideal society numbers, wealth and power should be subordinate to culture and character, a principle that goes directly against the practice of the Western nations, who bow down before numerical strength and call it democracy, who bow down before wealth and call it aristocracy and who bow down before power and call it leadership. If we have gone wrong in one way in the East, they have gone wrong in another way in the West. But if a society could be built on the *Upanishadic* principle of spiritual progression, those who are spiritually most advanced occupying the most responsible positions and those who are least advanced occupying the least responsible positions, and all working together in love and harmony like a joint family, we should have an ideal society. And that is all that the *Varna-dharma* says.

The four stages of life

What applies to *Varna-dharma* applies also to *Aasram dharma*. If the former is the rule for an ideal society, the latter is the rule for the ideal individual life.

The four *Aasramas*, like four *Varnas* and the four *Yugas*, are only terms in a series of spiritual progression. *Brahmacharya*, *Gaarhastya*, *Vaanaprastha* and *Sanyaasa* indicate the path of spiritual progress for the ideally ordered life of any individual. According to Hinduism *Sanyaasa* is the roof and crown of life. Almost all our great men, especially our religious teachers were *Sannyasins*. I make bold to say that it is because we have recognised in theory at least this principle of spiritual progress as the basis of good life—whether social or individual—

that we have, in spite of all our miseries and humiliations, lived on to the present day and not gone the way of the Greeks and the Romans. Therefore, it is, as necessary for us to-day to hold fast to the spirit of *Varnaasrama-dharma*, as it is necessary to abandon its letter. The letter kills, the spirit saves.

The four ends of life.

The principle of spiritual progression may be applied to the life of the individual in several other ways also. Like the four *Aasramas* mentioned above are the four *Purusharthas* or the recognized ends of *life-Artha* (wealth), *Kaama* (desire) *Dharma* (virtue) and *Moksha* (liberation). Acquisition of wealth, gratification of desire, obedience to moral law and the realization of *spirit* are the terms in a progressive series. It is well known how endlessly their formula of *Dharma, Artha, Kaama-Moksha* setting forth the fourfold aim of life is repeated in all our rites and ceremonies.

Trigunas and Trigunaateeta.

Another famous formula is that of the *Gunas* or qualities—*Tamas* (dullness), *Rajas* (energy), *Sattva* (goodness) and *Trigunaateeta*, (a state transcending these three). The three *Gunas* are supposed to be the fundamental qualities of *Prakriti* or *Nature*. And, as man is a dual being composed partly of *Nature* and partly of *Spirit*, we have in him the ascending series of *Tamas, Rajas, Sattva* and *Gunaateeta*. Our physical life, our emotional life, our moral life and our religious life certainly form a progressive series in terms of *Spirit*.

The four states of consciousness.

Or, again take the formula which is so often discussed in our *Vedaantic* psychology—the formula about the states of

consciousness of man—viz., *Jaagarita* (waking) *Svapa* (dreaming) *Sushupti* (sleeping) and *Tureeya* (the forth). Waking consciousness, dream consciousness, sleep-consciousness and transcendental consciousness are here the terms of a progressive series, as we proceed from the outer to the inner recesses of man's being. That is we have first the consciousness in which the subject is entirely dependent on the object. Our waking consciousness is filled with impressions directly derived from the objects presented to the senses. Then, we have the consciousness in dreams in which the impressions are not derived directly from any objects, for no objects are present, but from the images of objects stored in the memory. Here the subject is therefore not dependent on the presence of the object. In the next stage of sleep-consciousness, we have the pure subject, for in deep sleep there are no impressions either from objects or from images of objects. But still, the principle of objectivity is there in a dormant condition, for at any moment the sleeping man may either wake up or have a dream. Moreover, in sleep-consciousness, we have only the negative aspect of the pure subject, for, this state is for all practical purposes a state of unconsciousness. Therefore, a fourth state, technically called *Tureeya*, has to be postulated in which the subject is permanently free from the principle of objectivity and in which we have the positive aspect of the liberated soul.

The Four Grades of Individual Soul.

The individual soul in these four states of consciousness is called *Vaisvaanara*, *Tajasa*, *Prajnaa* and *Aatman* respectively.

The Four Letters, the Pranava.

This is symbolically represented by *A-kaara*, *U-kaara*,

Ma-kaara and *Aum-kaara*, which constitute the sacred syllable, *Aum*, called *Pranava*.*

The Four Grades of World Soul.

And, again, corresponding to the four stages of cosmic consciousness known as *Viraat Hiranyagarbha, Iswara* and *Brahman*. That is the universal *spirit* as individual consciousness we have the four stages of progressively viewed by us as *Viraat, Hiranyagarbha, Iswara* and *Aatman* in its gross, subtle, causal and supreme forms respectively. The final terms in these two series belonging to individual and cosmic consciousness viz., *Aatman* and *Brahman* are identical. The subject and object are ultimately the two sides of the same reality. This is *Adwaita the highest pinnacle of Hindu philosophy*, "Like an ocean is that one seer, the one without a second That is the world of *Brahman*, O King" says *Yajñavalkya to Janaka in the Brihadaaranyaka Upanishad*.

The Law of Spiritual Progression-The living Rock of Hindu Dharma.

Let us now summarise and see how many formulas we have come across in this short discourse. We have (1) a formula about the four classes of living beings, (2) a formula about the four ages of man, (3) a formula about the four classes in an ideal society, (4) a formula about the four

- * *Aum*-It also implies the *Hindu Triad* and expresses the three in one. 'A' name of *Vishnu*, 'U' *Siva* and 'M' of *Brahmaa*. It is the shortest token, as it were to indicate the *Brahma*-which is described as *Sat-Chit-Ananda Swarupa*.

stages of life, (5) a formula about the four ends of life, (6) a formula about the three qualities of nature and human nature and a state transcending these belonging to Divine Nature, (7) a formula about the four states of consciousness, (8) a formula about the four grades of the individual soul according to the states of consciousness, (9) a formula about the grades of the world-soul as we progressively understand it and finally, (10) the *Pranava* itself—the highest of all formulas known to us. All these ten formulas embody one and the same law, viz., the Law of spiritual progression. which is the living rock out of which, as I said at the beginning, *Hindu Dharma* is carved.

"Mama Vartmaanvartante Manusyaah Paartha Sarvasah,"
(Geeta.)

CHAPTER 3

Universities in Ancient India With Special Reference to Aayurvedic Studies.

BY

DR. RADHA KUMUD MOOKERJI, M. A., Ph. D. P. R. S.

Vidya-Vaibhava. (Benares) Itihaasa Siromani (Baroda)

*Professor and Head of the Department of History, Lucknow
University, Lucknow.*

[CONTENTS-I-Mass Production in Education-Personal relationship between pupil and preceptor-Forest, the fountain head of all civilization-Domestic system-Brahmacharya-a process of biological growth-Congregational Worship-II-Collektivism, organisation-Conferences-Travelling schools-III-Congregational Education in Budhistic system-IV-Universities-Foreign scholars at Nalanda-Residential University-Individual treatment adhered to-Countries influenced by Indian thought V-Medical Education-Period of probation-Many branches of study-Proficiency in both theory and practice essential-Qualifications of a physician-Four accessories for treatment-The Nurse-Quality of Medicine-The Patient himself-List of diseases in Atharvaveda-Ashtaadhaayi of Paanini-Artha Saastra of Kautilya-Rules for the practice of Physician-Classes of Practioners-Hospitals and Medical stores-Out break

of Epidemics-Rats as Carriers of Infection-Sanitary regulations-Budhist Text-List of Medicines-Surgical treatment-Jeevaka, Budha's Physician-Taxilla, centre of Medical Education-Antiseptics in Surgery-Teachers of Aayurveda-Ancient Indian Hospitals-Medical studies in general education-Syllabus of Medical Studies.]

I

Mass Production in Education.

It is to be understood at the outset that Education in ancient India was not imparted and organised on the basis of what may be called the methods of large scale or mass-production leading to the development of big institution like Universities. On the contrary, the Indian indigenous ideal of education has been to treat it as a secret and sacred process, the process of the individual's inner growth which can only be achieved by means of a constant and close relationship between the pupil and the teacher, whose personal touch and sleepless vigilance counted most in the pupil's education. Education itself was taken in its literal and true sense as involving the educating of the latent capacities and potentialities, the personality, of the pupil concerned, and was, therefore, treated as a process of biological development and not as a mere mechanical process operating on the basis of a collective drill and training. Unfortunately, like most other spheres of life, Education itself has been very largely mechanised in this modern age of mechanics and materialism.

The mechanism of Education has proceeded on the basis that the innate and vital differences, mental, moral, physical, which nature has created between individuals must not have any place or recognition in its system which is to be worked on the basis of the artificial device or an abstraction called the 'class' to which individuals shedding their differences are relegated as supposed equals. It is like treating the patients differing as to their ailments to the same prescriptions, remedies and medicines in a hospital. The result of such an absurd process of treatment can be imagined. The patients will be taken to their speedy end by such a uniform handling of their different diseases.

And yet if the individual patient suffering from his particular disease of the body is to be treated as a sacred entity by himself, how much more should such individual treatment be necessary in the case of persons seeking and for the removal of their moral and mental defects and deficiencies which are, moreover, intangible and cannot be visualised or definitely diagnosed like the diseases of the body. It is very difficult to add a single inch to the physical stature of an individual even by a well-planned and scientific process of physical instruction and exercise. It is far more difficult to improve the stature of the dwarfish mind or to widen and liberalise a narrow nature and a contracted heart. India has always taken Education as a means of self-growth and self fulfilment which must be the supremely private concern of the individual associated with his teacher in the pursuit of that all-absorbing task and mission of his life.

Personal Relationship between Pupil and Preceptor

The educational system of ancient India was thus

based upon the personal relationship between the pupil and his chosen preceptor, and the institution in which above such relationship could express and embody itself, the home of the preceptor, was the school of the pupil, the hermitage, located in a sylvan retreat, away from the dust, and din of the cities, the distractions of urban life, its bustle and strife, in the solitude and silence of the forests. India has thought out her highest in her woods: her highest thought is embodied in her precious books of the Woods' designated as "AARANYA-KAS", the works which are to be studied in the atmosphere of meditation which the woods breathe. India's civilization has been pre-eminently not an urban but a rural civilization. It is the product of her forests and not of her crowded and materialistic cities. This point has been very graphically put in the inimitable words of Poet Rabindra Nath Tagore whose recent death, deeply deplored all over the world, has deprived it of its greatest man of letters.

Forest—the Fountain-head of all civilization.

"A most wonderful thing we notice in India is that here the forest, not the town, is the fountain-head of all its civilization",

"Wherever in India its earliest and most wonderful manifestations are noticed, we find that men have not come into such close contact as to be rolled or fused into a compact mass. There, trees and plants, rivers and lakes, had ample opportunity to live in close relationship with men."

"In these forests, though there was human society, there was enough of open space, of aloofness, there was no jostling. Still this aloofness did not produce, inertia in the Indian mind; rather it rendered it all the brighter. It is the

forest that has nurured the two great ancient ages of India, the *Vaidika* and the *Buddhist*."

"As did the *Vaidika Rishis*, Lord *Buddha* also showered his teaching in the many woods of India."

"The current of civilization that flowed from its forests inundated the whole of India."

Domestic India.

Thus the fact of matter is that both in Education and Industry India believed in the domestic system, in the methods of small production and not in those of mass production in factories turning out only standardised articles, quantity rather than quality. All artistic work, however, is the product of the divine skill implanted in the hand, and not the product of the machine. The making of man, the development of personality, depend very much on the human factor, on individual attention and treatment on the part of the teacher. And man is the noblest work of God made after His image, whose making must not be consigned to mechanical processes like an automaton. Mental and spiritual growth cannot be achieved by mere external machinery, apparatus or organisation. It cannot be achieved solely by schools, temples, or the methods of congregational worship.

Brahmacharya-A Biological Process of Growth.

Organisation or mechanisation is fatal to mental and moral growth. Each must achieve it in his own way under the personal direction of his teacher in their intimate mutual association. The pupil is the *Antevaasi* of his teacher and his education is called "*Brahmacharya*", a process of life, conduct, and discipline (*Charya*), a process of biological growth.

The position may be summed up in the words I have used in my forthcoming work on Ancient Indian Education.

“The vital principle of Ancient Indian Education was that of individual and intimate relationship between pupils and their teachers as members of the same family, living in a common home, the home of the teacher, functioning as the School in those days. Such a principle did not favour the growth of large educational institutions which, ignoring the vital differences between individuals, teach them collectively by “Classes” and aim at mass-production in Education. But Education is a delicate biological process; a process of mental and moral growth which cannot be achieved by mechanical processes, the external apparatus and machinery of an organisation. As in Education, so in a more marked degree in the sphere of religion and spiritual life, India did not believe in the external and mechanical methods of organisation and did not develop any ecclesiastical institutions like the Churches. The interests of religious life and spiritual growth were not handed over to any institutions and their regimented life of routine but were left to be dealt with between the *Guru* and his pupil in their personal relationship form which the whole world was excluded. A man’s inner religious life was thus treated as his supremely individual concern in which the collective life of the community should have no part. Spiritual growth, as we have seen, depends on one fundamental factor described as *Chitta-Vritti-Nirodha* and, therefore, all avenues of influences from the external world which might disturb or distract the mind should be closed, so that spiritual life may grow freely in the atmosphere of inner peace and quiet.

Congregational Worship.

And yet Ancient India was not lacking in religious institutions like temples and *Mathas* and *Tirthas* or places of

pilgrimage where crowds gather in the interests of religious life. That is because the external aspect or element of these organisations does not supersede or interfere with the inner religious life of the individuals they bring together. *Hinduism* does not believe in congregational worship. There is solitude in a crowd. The press of pilgrims in a crowded temple on a sacred day of festival leaves every individual pilgrim to himself, to say his personal prayers by himself, in his own way, and in secret and private. There is an inspiring tradition that at the temple of *Jagannaath* at Puri, which is notorious for its daily crowds of worshipping pilgrims, *Lord Chaitanya* was free to take to a solitary corner of the temple, at some distance from the image of the *diety Jagannaath*, where he was always seen in the trance of meditation on the *diety*.

It will thus appear that the emergence of temples and *Mathas* in Ancient India was not inconsistent with its religious principles and ideas which banned organisation in the Western sense, in the sphere of learning and religion, for fear lest even they, too, be mechanised." :Mechanisation is fatal to learning and spirituality where the mind and soul should be left free to grow in the natural way like living organisms.

Collectivism, Organisation, and Conferences.

The methods of collectivism and Organisation were however applied in the sphere of higher education and advanced studies and research. The *Rig Veda*, for instance, knows of the working of *Samghas* or assemblies of learned men holding discussions by which the language and the philosophy of the *Vedas* were being hammered into shape and polished into perfection. The literature of the *Brahmanas* and *Upanishads* tells of learned conferences meeting at the

Courts of Kings who convened them as being themselves the devotees and patrons of learning. The proceedings of the most famous of the Conferences are recorded in the precious philosophical works the *Chhaandogya* and *Brihadaaranyaka Upanishads*, which relate how the Conference was convened by *Raajarshi Janaka* at his Court in *Videha* and it was attended by all the learned men from the distant *Kuru Panchaal* country, which was then the most important centre of philosophy and religion. The methods and procedure followed for its business in that Conference, the earliest of the Conferences in the World, are well worthy of application to modern Conferences. These Conferences were called for the serious and supreme business of advancement of knowledge through the process and technique of debate and discussion of new philosophical positions which their exponents might place before their colleagues and comrades in the pursuit of knowledge. These fellow-seekers after knowledge are aptly called *Sakhaas* by the *Rig Veda*. A new theory was established and would obtain currency only when it is acceptable to a learned body and attains what is called *Suhrit-praapti* in the *Nyaaya* Philosophy i. e. the assent of fellow-seekers after learning.

A very interesting point to note in the proceedings of this Conference is that it was addressed by a learned lady named *Gaargi Vaachakanavi*, who, held her own in its debates against the men-philosophers led by a *Rishi* of the eminence of *Yajnavalkya*. The women of Vedic India were fully the equals of men in the quest of learning and truth and were known as "*Brahmavaadini*", some of whom even figure as *Rishis* or 'Seers' in the *Rigveda*, with some of its hymns attributed to them, *Rishis* like *Vishnavaaraa*, *Apaalaa* or *Lopaamudraa*.

In addition to these periodical Conferences a of learned men meeting at the Courts of Kings, of learned Kings like *Janaka* of *Videha*, *Ajaatasatru* of *Koasi*, the *Panchaala* King *Pravaahana Jaivali* or King *Asvapati* of *Kekaya* much of the higher learning of those higher learning of those days was promoted by companies of what are called in the *Upanishads* *Charakas*. Scholars were wandering through the country in quest of its principal centres and exponents, and further advancement of their knowledge by means of learned discussions which became sources of enlightenment in the localities concerned.

Travelling Schools.

But besides these travelling scholars as agents for the spread of higher learning in the country, there were also in existence and operation established institutions of higher learning and research, the Academics, of which the most noted example mentioned in the *Upanishads* is the *Panchaala, Parishat*. It is stated that the King of the *Panchaalas* went out of his Palace every morning to attend the meeting of this *Parishat*, and to cultivate the company of the greatest men of learning in his country. The *Upanishads* only record the transactions of these learned bodies or *Parishats*.

Congregational Education in Buddhistic System.

The idea of organisation in education and the application to it of the methods of collectivism were emphasised very much by *Buddhism* in the special conditions in which it worked. *Buddhism* was built up on the basis of monastic brotherhoods which its *Bhikshus* or monks were organised. It had thus to deal with large numbers of monks for whose education the method of individual treatment and of the

personal contact between the teacher and the pupil in small homes of learning was not applicable. Thus congregational education was a necessity in the *Buddhist* system. The small residential school of the *Brahminical* system, the hermitage of the solitary teacher gathering round him only a few pupils whose education he could manage by himself was now expanded into large residential establishments called the *Vihaaras* or monasteries which in the methods of organisation, study and teaching anticipated the modern Universities.

But these *Vihaaras* or monasteries were functioning mainly as centres of higher learning and not of primary or secondary education. Ancient India knows of many such Universities, the most noted of which are *Naalanda*, *Vikramasila*, *Jagaddala*, *Odantapuri*, *Valabhi*, *Mithila* and *Nadiala*. As these were post-graduate Universities, admission to them was by no means easy. The gates of the University of *Vikramasila* were guarded most scrupulously by the most erudite of scholars who held the examination for admission which it was difficult to pass. The members of this Admission Committee were aptly called *Dwaara-Panditas* whose business was to see that the standard of the University's Scholarship was not lowered by its invasion by mediocrities. The latter University of *Mithila* made hard its test for graduation or completion of study. The test was called *Solaakaa-Pariksha*, requiring the candidate for graduation to explain that page of the manuscript which was pierced last by a needle run through it. This meant that the candidate had to demonstrate his complete mastery of the subject of his study in all its parts and details, so as to be able to explain without any preparation, and at random any page of any manuscript bearing on his studies. The severity of the Entrance Examination at *Naalanda* gains an all India

notoriety. It was because *Naalandaa* was a centre for specialisation of highest degree, 'for solution of doubts and controversies, and training in the arts of disputation and public speaking.'

Universities.

The best account of the University is furnished by the two Chinese Pilgrims to India viz., Yuan Chwang, who travelled in India for 16 years i. e., 629—645 A. D., as a student of *Buddhism* out of which he spent 5 years as a student at the University of *Naalandaa*, while I. Tsing spent 10 years 675 to 685 A. D. as a student there. Yuan Chwang states that "Foreign students came to *Naalandaa* to put an end to their doubts and then became celebrated." And again:— "Of those from abroad who wished to enter the Schools of Discussion, the majority beaten by the difficulties of the problems, withdrew; and those who were deeply versed in old and modern learning were admitted, only two or three of the ten succeeding". This means that at the Entrance Examination of the University only about 20 per cent could pass and 80 per cent failed to get admission. The University thus comprised only picked Scholars who could take their part in its academic life of the highest standard, as represented in its "Schools of Discussions", of which the University was mainly made up. To be a student of *Naalandaa* was thus the highest academic distinction of the day. Yuan Chwang states: Those who stole the mane of *Nalaadaa brother* were all treated with respect, wherever they went". This statement is confirmed by I. Tsing: "There eminent and accomplished men assemble in crowds, discuss possible and impossible doctrines, and after having been assured of the excellence of their opinions by wise men, become far-famed for their wisdom". Yuan Chwang clenches the matter by

stating that the students of *Naalanda* were looked up to as models by all-India. He also gives a picture of the high level of academic life maintained at *Naalanda*, a level which is hardly attained at any modern University: "In the establishment were some thousands of brothers, all men of great ability and learning several hundreds being highly esteemed and famous; learning and discussing they found the day too short; day and night they admonished each other, juniors and seniors mutually helping to perfection."

Foreign Scholars at Naalanda.

But *Nalanda* was not merely the greatest centre of learning in India of those days. It was like a *Viswa-Bhaarat*, an inter-national centre of learning. The most famous seat of learning in the whole of Asia, so as to attract students from the different and distant countries of Asia. Both Yuan Chwang and I. Tsing Saw among the students at *Naalanda*, foreign scholars hailing from far off countries like Korea, Mongolia, Tokhara, Japan, China and Tibet. I. Tsing counts 56 such foreign scholars, as residents at *Naalanda* in his time, among whom was a Tartar.

It must be noted that it was not an easy matter for these foreign scholars to find their way to India in those days. Some of them had to come to India by the sea-route in ships that stopped at several intermediate stations on the way like Java and Ceylon, and were dropped in India at its port of Taamralipti. Those coming by the land-route generally came via Khoten, Tibet and Nepal, facing all possible risks and hardships. Such pilgrimage and pursuit of knowledge under unexampled difficulties undertaken by so many Chinese Scholars only demonstrate the regard which

the Asiatic countries had for India, as the home of their religion, and of the highest knowledge. Yuan Chwang gives an idea of the difficulties of his travel by the land-route: "He has been where no other had ever seen and heard. Alone he had crossed trackless wastes untenanted by man. Bravely he had climbed fabled mountains high beyond conjecture, rugged and barren, ever chilled by icy wind and cold with eternal snow." Once he had to go without a drop of water to drink for 4 nights and 5 days. Once he was under arrest till he obtained his release from the Chief of the place, by his moral greatness, his sheer truthfulness. In another country, he was the guest of its King who became too fond of him to part with, till he had to resort to hunger-strike as a means of release."

Some features of the organisation of the University, its external machinery, and apparatus of management, may be now noticed in brief as being full of lessons and giving food for thought for modern educational arrangements.

A Residential University.

Naalanda was the largest residential University, that India has ever seen. It accommodated within its precincts a vast University Colony, a population comprising of 8500 pupils, 1510 teachers together with executive and menial staff, so that its population may be estimated at about 12,000. The University undertook a heavy burden of obligations towards population. It undertook to give its students and teachers numbering about 10,000 free lodging, free food, free clothing, free bedding, free medicines, and of course free tuition. There was then no idea of deriving a part of its expenses from the income from fees to be levied on students. Education was made free by the liberal grants made for the

purpose by royal and private philanthropy. The educational endowments of those days took the form of grants of land. The *Naalandaa* University was liberally endowed with such grants of land. At the time of Yuan Chwang, it counted in its possession as many as 100 villages. At the time of I. Tsing the number of the University's villages increased to more than 200. The University thus became a very big landlord of the locality. It depended upon its villages for the supply of daily food for its population. There was a steady flow of these supplies day by day, a daily supply of about 300 maunds of rice and several hundred maunds of butter and milk. The rice came from its paddy fields and butter and milk from its village dairies. The contract for this daily supply was taken by 200 householders of these 200 villages, each of whom must have been the *Graamani* or chief of his village.

It is to be duly noted that the grants of lands made in favour of the University carried with them certain obligations which the University had to undertake. It was left to the University to make the lands profitable so that it could maintain itself out of these profits. The University had to make the cultivation of its paddy fields profitable. It had thus to organise an efficient Agricultural Department which could extract the utmost profit out of the cultivation of its lands. Thus the system of the educational endowments meant that Agriculture was to be the concern of the colleges and Universities, instead of being consigned to the care of an ignorant, illiterate and indigent peasantry.

Individual Treatment Adhered to.

We have just now noted that *Naalandaa* provided for 1500 teachers for giving instruction to 8500 students. The

high proportion which the number of teachers bears to the number of the taught only shows that the method of individual treatment in education was still adhered to as far as possible in the midst of a vast collectivist organisation. It is also stated that as many as 100 chairs or pulpits were arranged every day for the lectures or discourses to be delivered by as many different teachers, "and the students attend those-discourses without any fail even for a minute"—as observed by Yuan Chwang. This means that 100 different lectures were being delivered on 100 different topics to 100 different classes of students every day.

Other Countries influenced by Indian thought.

It may be noted in conclusion that the students of *Naalandaa* took a leading part in the intellectual life not merely of India but also of the countries which came under the influence of Indian thought. In this extension of India's thought to foreign countries, it is the students of *Naalandaa* who took the lead. For centuries the students of *Naalandaa* went out in unending streams to work in foreign countries like Nepal, Tibet, and China, to introduce to them the wisdom of India and the texts in which it was embeded. These texts were difficult philosophical and religious texts written in difficult technical *Sanskrit* and *Paali*. The Indian Scholars were at work for centuries in carrying on their self-imposed mission which they took to as a religious obligation, in translating these Indian texts into the languages of countries of their adoption. Thus these scholars of *Naalandaa* were not merely adepts in profound philosophy. They were also accomplished linguists. The *Naalandaa* University developed efficient schools of Tibetan, Nepalese and Chinese studies in addition to the indigenous schools of *Sanskrit* and *Paali*, so as to be

able to turn out scholars who would be linguistically equipped for carrying on their work in the aforesaid foreign languages like Chinese and Tibetan. The development of what may be called a Greater India was one of the unique achievement of University of *Naalanda*.

V.

Medical Education.

The principles and practices governing Education in general influenced those obtaining the sphere of what may be called vocational Education, the education in Arts, Crafts and in the professions.

Aayurvedic Upanayana.

The same principle of individual intimate relationship between the teacher and the taught living together as members of the same family and homestead was also operative in regard to medical education. Accordingly we find that the *Susruta Samhita* (Chapter II) prescribes for the student of *Aayurveda*, a separate performance by him of special *Upanayana* ceremony, although such a student as a *Dvija* is, i. e. a *Brahman*, *Kshatriya* or *Vaisya*, should have already performed the general *Upanayana* ceremony in accordance with the rules of his order. An interesting point of difference in the *Aayurvedic Upanayana* ceremony is that it insists on certain indispensable physical and moral qualifications lacking which

a student is not considered eligible for the noble medical profession with its social responsibilities and obligations. A medical student, for instance, should not have repulsive physical features. He should be endowed with properly formed bodily organs among which are specified tongue and teeth, lips and eyes, nose and mouth. The moral virtues required include cleanliness, courage, humanty, capacity, zeal, good manners and morals, purity of body, mind and speech, and lastly capacity for taking pains.

These are given some significant details of *Aayurvedic Upanayana*. Worship was offered to select dieties associated with *Aayurveda*. *Brahman*, *Prajaapati*, the two *Asvinis* and *Indra*, also, the following *Rishis* being associated with the development of *Aayurvedic* Science viz., *Dhamvantari* *Bharadwaaja*, *Aattreya* and the like.

It seems that the study of *Aayurveda* was open to all the castes. It is stated by some authorities that a *Sudra* may be initiated and admitted to a study of *Aayurveda* if he was qualified by the purity of his pedigree and possession of the prescribed moral qualifications.

When the medical *Upanayna* ceremony was being conducted, the Preceptor, in the presence of *Agni* as witness, will ask the pupil to take an oath that he will follow the injunctions stated "The pupil must abjure lust, anger, greed, inertia, vanity, conceit envy, harshness, lying, laziness, and disreputable deeds. He must duly cut off his nails and hairs; wear pure silken cloths (as preventing infection) and practice *Brahmacharya* and truthfulness. He must perform his prescribed duties, as the preceptor must perform his. He was also asked to treat, without charging fees or cost of medicines, the following persons; the *Dvija*, *Guru*, pauper, friend, ascetic,

protige, saint, orphan and guest. He must avoid treating as his patients the hunter, fowler, the degraded and sinful". The principle of these rules is that the physician must himself be possessed of a sound healthy body, observe rules of hygiene and avoid all kinds of defilement, infection and contamination, and be a man of strict morals as having to deal with patients of both sexes and of all sorts and conditions.

Period of Probation.

The *Upanayana*, ceremony by itself did not complete the Students' admission to medical education. It only introduced a period of probation for a pupil during which he will be under observation for testing his fitness for the medical career. *Susruta* fixes this period at 6 months.

When the period of this probation is over, and the student is able to establish his fitness, his admission is completed. He is now introduced to the study of medical texts. As in the case of Vedic Education, the teacher is to impart the texts orally to his pupil slowly, and in parts, in padas (syllables), paadas (1/4th of a sloka) and Slokas. The first process, therefore, is for the pupil to receive the texts from the lips of his teacher and commit them to memory by recitation and repetition. The second process is for the pupil to grasp the meanings of the texts that are memorised. A pupil who has only learnt the words of the texts without their meaning which he is unable to expound is likened to a beass of burden which only undergoes the pain of carrying a load of sandalwood without enjoying the pleasure of its smell. Such a student vainly puts himself to the strain of study without being able to enjoy its fruits. This Aayurvedic passage echoes the famous passage of *Yaaska* in his *Nirukta*. *Yaaska* compares one who grasps the more sound of the Vedic

word without its sense, to the tree not bearing any fruit or flower, or to one wandering about with a barren cow,

Many Branches of Study.

It is also pointed out that *Aayurveda* has many branches of study which throw light on the other. A student of one subject should approach the master of another subject for interpretation of allied topics or points. In medical study, proficiency in one particular subject or branch is not sufficient. The complete knowledge of Medicine as a whole cannot be contained within only one subject or branch; but is spread over many subjects and branches which thus help in the interpretation of each. The meaning of a particular science is not understood in its full implications like the contents of a seed (*Vija-bhuta*) and is rendered explicit by the light derived from allied subjects. Therefore, a medical man cannot achieve success unless he is a master of several Sciences (*Bahu-sruta*).

Proficiency in both Theory and Practice Essential.

It is again emphasised that a medical student must acquire a double proficiency in both Theory and Practice (*Saashtra and Karma*) which are likened to the two wings on which a bird is borne in its upward flight. The bird of one wing cannot fly at all. They are also likened to the two wheels of a chariot which enable it to perform its functions in the field of battle. Similarly, a physician who is merely a *Pandit* and grounded in the texts of his *Saastras* (*Saastrajna*) and is totally unskilled in the practical application of his theoretical knowledge will break down and will be at his wit's ends, unable to decide what he should do, puzzled by the actual sight of a patient, like a coward losing his sense

in a field of battle (*Mugdha* and *Kimkartavyavimudha*). On the other hand the mere empiric or quack who practises his profession without a theoretical knowledge of the science of Medicine deserves censure and is liable to extreme penalty at the hands of the State. The best of medicines, the elixir of life, will become a poison if wrongly applied by a physician through his ignorance, while a physician who with all his theoretical knowledge, is ignorant of the art of surgical operation (*Chhedana*) and application of ointments and disinfectants (*Snehaadi-kaarya*), is equally unacceptable. Such undeserving medical men only murder people under the licence of the state. [For references, see my Ancient Indian Education (Macmilan London), pages 345-348].

Qualifications of a Physician.

The *Ayurvedic* texts also lay down the qualifications to which the physician is to conform. First of all he must be well-grounded in the texts of Medical *Saastras* or treatises (*Adheeta-Saastram*). He must know not only the texts but grasp fully their meaning. He must possess skill in practical work, in surgical operations (*like Chheda* and *Sneha*); he must be full of resourcefulness and originality (*Svayam Kriti*) possessed of light touch, and swift hand (*Laghu-hasta*), clean, of an optimistic temperament or cheerful spirits. (*Soora-Vishaada rahita*), ready with all necessities and materials of treatments (*Sajjopakar anabheshaja*) of presence of mind, of keen intellect, possessed of experience in the profession (*Vyavasaayi*), learned in theory, and devoted in truth and morality.

Four Accessories for Treatment.

But the success of a physician depends not merely on his qualifications but on certain other factors. No doubt the

most important factor is the physician himself who is likened to the helmsman who can successfully steer a boat even if it lacks its rudders. But this work must be supplemented by other accessories. The efficacy of treatment depends not merely on the prescriptions of the physician but the manner in which they are applied. It depends upon the efficiency of Nurses (*Parichāraṅka*) and also on the quality of the medicines supplied. And, lastly, there is the important factor presented by the subject of treatment the patient himself.

The Nurse.

The qualifications of a Nurse are indicated. The Nurse should be endowed with a variety of virtues. He should be full of tenderness (*Snehayukta*), should have no likes and dislikes, should be possessed of a robust physique, capable of endurance, should be able to keep up the drooping spirits of the suffering patient (*Vyaadhita Rakṣanam*), possessed of sufficient technical knowledge to be able to apply correctly the prescriptions of the physician (*Vaidyavaakyā-kṛit*), and untiring in his work.

Quality of Medicine.

An important factor in the system of treatment, in addition to the efficiency of nursing is that of the quality of Medicines. To ensure their quality and efficacy their raw materials or sources like the medicinal plants should be properly looked after. They should be grown in a wholesome manner, gathered in proper time, duly measured, should be rendered palatable and mixed up with due degrees of smell, colour, and taste. The medicines should not be repulsive and should not produce any undesired effects; should be administered in proper condition so as to effect cure of ailments.

The Patient Himself.

Lastly, there is the factor of the patient himself in the success of the treatment. The patient must be patient under suffering, should suffer from a disease that is curable, should have command of materials for treatment. He should have further the moral virtues of freedom from indulgence, should have faith in his physician whose directions he must obey and should trust to God. (Ib. pp. 348, 349).

List of Diseases in Atharva-Veda.

Now, as to actual treatment of diseases and cases some details are furnished by the old Indian texts, and especially the early Buddhist canonical texts and *Jatukas* with their leanings towards concrete facts.

The earliest evidence on the subject is given in the *Atharva-Veda* in which are to be found glimpses of the beginning of Indian medicine. It mentions the prevalence in India even in those early days of diseases, like fever, jaundice, dropsy, scrofula, cough, ophthalmia, baldness, impotence, and leprosy. It also mentions appropriate herbs as remedies against these diseases. It refers to ailments calling for surgical aid, such as fractures, wounds and the like. It knows of remedies against bite of snakes and other injurious insects redolent of the swampy regions of eastern India, against poison, mania and other complaints. It ungenerously wishes away some of the diseases like fever to distant regions and peoples such as the Mujavans, the Bahlikas or a Sudra girl whom it is asked to shake-fever, which is aptly described to be "now cold, now burning hot", which "makes all men yellow" with its "brother consumption, and sister, cough and nephew, herpes" (V-22). The malarial

fever of the swampy regions of Magadha and Bengal is wished away to the North-west by the *Aayurveda* which thus belongs to the time when Vedic Civilization was extending to these parts of India (My Ancient Indian Education. P. 66).

Ashtaadhyayi-of Paanini.

After *Atharva-Veda*, the *Ashtaadhyayi* of *Faanini* (whose date, according to Sri R. C. Bhandarkar, was about 750 B. C. and according to Macdonell about 500 B. C.) throws some light on the medical knowledge and practice of those days.

Paanini knew of the three humours of the body, *Vaata* (V. 2.219). *Pitta* (V. 2.97), and *Sleshman* (V. 2.100, *Kaatyayana* in his *Vaarttika* on *Paanini* (V. 1.38) mentions the three humours of the body as the causes (*Nimitta*) of diseases and Eggeling commenting on this *Vaarttika* says that "some kind of humoral pathology would seem to have prevalent among the Indian Physicians several centuries before our Era".

The *Kaasikaa* commenting on *Paanini* V. 2.31 refers to intermittent or malarial fevers called *Dviteeyaka*, *Chaaturthaka*, *Sitaka* and *Ushnaka*. The diseases of the seasons are mentioned e. g., *Saaradika Roga* in IV. 3.13.

Paanini in his grammar mentions the following diseases of the day (1) *Atisaara* (V. 2.129), Dysentery, (2) *Arsa* V. 2.127) *Haemorrhoids*; (3) *Aasraava* III. 1.141) discharge, diabetes or diarrhoea; (4) *Kustha* (VIII 3.97), Leprosy; (5) *Kshettriya* (V. 2.92) an incurable, hereditary disease; (6) *Nyabja* (VII. 3.51) Hump-back; (7) *Paamaa* (V. 2.100) a skin disease; (8) *Vikshaava* (III 3.25), Cough; (9) *Somjvara* (III. 2.142), Consumptive fever (10) *Sidhma* (2.97), Leprosy; (11)

Sparsa (II. 3.16) a disease derived from touch: (12) *Hridroga* (VI. 3.51) heart disease.

There are also references to patients suffering from certain diseases after which, they are described as *Prachhardikaa* *Pravaahikaa* or *Vicharchikaa*—as they suffer respectively from Nausea, dysentery, and Scabe (III. 3.108).

Arthasastra of Kautilya.

We may now turn to the interesting evidence contained in the important *Sanskrit* work, the *Arthasastra* of *Kautilya* in which there are good grounds for assigning to the 4th century the time of Emperor Chandra gupta Maurya. It throws much light on medical practice and regulations for Public Health and Hygiene, not to be found in any other *Sanskrit* work.

Rules for the Practice of Physicians

The State framed Rules for the practice of Physicians. They had to report to Government cases of dangerous diseases. They were fined in case of deaths from such unreported diseases.

Error of treatment (*Karmaaparaadha*) causing death (*Vipatti*) was more heavily punished. A surgeon was to lose the limb which he caused a patient to lose by his mistaken operation. (IV. I.)

Classes of Practitioners

The Medical Profession was represented by the following classes of Practitioners: (1) The ordinary physicians (*Bhishajah* or *Chikitsakah*) (2) Specialists in the treatment of poisoning cases (*Jaangolividah*) (3) Specialists in midwifery

(*Garbhavyaadhi Samsthaah* and *Sulikaa chikiatsakah*): (4) The Military Surgeons who accompanied the Army with necessary appliances, instruments, oils and bandages (*Chikitsakah Sastryantraagada - Snehavastrahastah*) together with nurses who carried the necessary food and beverage for the sick and wounded (*Striyaschaannapaanarakshinyah*) and (5) Veterinary Surgeons to treat the diseases of cattle, horses and elephants (X. 3.)

Hospitals and Medical Stores.

The towns were equipped with Hospitals and Medical Stores furnished with sufficient quantities of medicines which could last for years and were constantly replaced or replenished with fresh supplies (*Navena anavan-Sodhayet*). In the King's house hold, the stock of medicines included those required for Midwifery, while medicinal plants and herbs were grown in pots in hot houses. Indeed the State maintained special Botanical gardens for the cultivation of medicinal plants (II. 4.)

Outbreaks of Epidemic.

Special measures were adopted against epidemic outbreaks (*Upanipaata-pratikaara*). Physicians were sent about the town distributing medicines (*Aushodhaih Chikitsakaah*) while saints and ascetics were at work on the employment of religious remedies. The same measures were adopted in the case of cattle plague. [IV 3.] *Pasn-Vyaadhi-maar ke*).

Rats as Carriers of Infection.

The danger from Rats as carriers of infection was known and measures were taken for the destruction of rats. Cats and mongooses were let loose, with penalty to those who would catch them. Poisoned food for rats was

also widely distributed, Where the epidemic prevailed in virulent form, a Rat-cess (*Mooshika Kara*) was imposed on citizens who were to trap a fixed number of rats per day (IV 3.).

Sanitary Regulations:

The Municipalities had a set of sanitary regulations in the interests of public Health and Hygiene. Throwing dirt (*Paamsu-nyaasa*) or causing mud and water to collect on the roads, (*Pankodaka sannirodhi*) was fined. The fine was doubled in the case of such obstruction on the King's highway. Committing nuisance in places held sacred (*Punyasthaana*), in reservoirs, temples and Royal buildings was punished except in cases where such pollution was forced by medicine, disease or fear. Throwing inside the city dead-bodies of animals, small or large, was fined. Corpses had to be carried along the prescribed roads to be burnt at prescribed places (1.36). Owners of houses were bound to keep their gutters clean for free passage of their waters (III. 8).

Buddhist Texts.

We now turn to the evidence of the Buddhist texts on the *Ayurvedic* practice of the times. Some of these texts are part of the Ancient authentic literature of Buddhist Cannon Law, which are assigned by Rhys Davids to the 5th century B. C., and which give a very fair insight into good deal of the medical lore current at that early period." (American Lectures pages 57—58).

The Buddhist monks at the *Vihaaras* fell victims to the usual ailments of the hot weather. For these, the medicaments prescribed consisted of the use of special

dietary which included ghee, butter, oil, honey and molasses
(*Vinaya Maha Vagga*. I. 33. 4.)

List of Medicines.

Among the medicines are mentioned certain roots, leaves, fruits, gums e.g. Hingu, and Salts, also some astrigent decoctions prepared from some of these *Chunam* was used for itches or boils, while as remedies against skin diseases are mentioned dry cow-dung and some kinds of clay and colouring matter. We have also mention of ointments of different kinds to be used against eye troubles; of oil to be rubbed, and of aroma to be sniffed in cases of headache of certain herbs, hemp water, steam bath and bath in medicated water as remedies against rheumatism. Medicinal oils are prescribed for disorders of the stomach. For worms in the stomach, the remedies recommended are the use of salt, of sour gruel, or of a particular kind of gruel made of ginger and two varieties of pepper, and of Tila seeds, rice and beans. As regards beans, it is stated that one could take with profit as much quantity as he liked. Varieties of artificial and natural juices and meat broth were known. The use of dung and urine of the cow and of some kinds of ash and clay is prescribed as remedies against snakebite.

Surgical Treatment.

We have an interesting report of fever contracted at *Srayasti* by *Saariputra* and subsiding by his use of edible stalks of certain lotuses which his friend, *Maudgalyayana*, procured and prescribed for him. The texts also tell of surgical treatment. They tell of a lancet operation to cut off proud flesh, of compresses, bandages and oils for the treatment of wounds; of a fistula cured by lancing and treated by

ointment, and of the use of a clyster *(*Chullavagga*, V. 27. 4.)

As a form of preventive medicine, wholesome dietary was recommended. The best food for health is stated to be rice-milk with its ten-fold merit in giving life, colour, joy, strength, steadiness of the mind, removing hunger and thirst, setting right the humours of the body, purifying the bladder, and promoting digestion (*Mahaa Vagga*, VI. 24) With rice-milk is coupled honey-lump (*My Ancient Indian Education* Pp. 425—427).

Jeevaka-Buddha's Physician.

The most famous Physician of the Buddha's time, in the 6th Century B. C. was *Jeevaka*, who was called by the title "*Komaara Bhachcha*" as a Specialist in the treatment of children's diseases; though the story of his life shows his extra-ordinary proficiency in general Medicine and Surgery. The details of the story throw interesting light on the methods of medical education of those days and of *Ayurvedic* practice.

Taxila-Centre of medical Education.

The greatest centre of Medical Education in those days in India was *Taxila*. A native of *Magadha*, as *Jeevaka* was, he had to repair to distant *Taxila* to study Medicine under a world-renowned physician who lived there. He had to spend full 7 years to complete his education; but, before declaring that his education was complete, his teacher prescribed for him a practical examination and said to him: "Take this spade and seek round about *Takkasila* a *yojana* on every side, and whatever plant you see which is not medicinal, bring it to me". *Jeevaka* studied the plants of the entire

* An injection into the Rectum.

region specified by his teacher but could not discover a single one which was devoid of curative properties and useless to living beings. The teacher was then satisfied with the answer of the pupil and said: "You have done your learning, my good *Jeevaka*" and gave him permission and license to go home and start practice. The teacher also gave him some money for his travelling expenses, which sufficed only for his travelling upto the city of *saaketa* where accordingly he was forced to halt and earn money by his practice.

At that time, at the city, a rich Setthi's wife had been suffering for 7 years from a desperate disease of the brain which many great and world renowned physicians could not cure, though much gold was spent as their fees. Young *jeevaka* had now a chance, but as he was young and inexperienced, he would not be given a call unless he stipulated that no fees would be paid to him if the patient was not cured. *Jeevaka* accepted this condition and began the treatment. He had one *prasara* (handful) of ghee boiled up with various drugs and administered the medicine thus prepared to the patient through the nose. By one dose of this medicine she was cured. Then the young physician was given lavish fees comprising 16,000 *Kahaapanas* (silver pieces) together with a coach, horses and servants. He was thus able to bear the expenses of the remainder of his journey home to *Rajagriha*, the capital of the empire of *Magadha* under *Bimbisara* whose son, Prince *Abhaya*, was the patron of *Jeevaka* who was sent to *Taxila* for his education with the scholarship granted to him by the prince. *Jeevaka* however, refunded the amount of his scholarship to its donor by his earnings from medical practice.

The next important patient whom *Jeevaka* treated was Emperor *Bimbisara* himself who was suffering from fistula

of which he was cured by *Jeevaka*, by the application of only one ointment. His success was at once rewarded by the King by appointing him as the Royal physician and later as the Physician of the *Buddha* and his *Samgha*.

The next important case treated by *Jeevaka* was that of a merchant-prince of *Raajagaha* who had been suffering for years from a chronic head disease. *Jeevaka* had to perform a surgical operation to cure him: he "tied him fast to his bed, cut through the skin of his head, drew apart of the flesh on each side of the incision; pulled two worms out of the wound, then closed up the sides of the wound, stitched up the skin on the head, and anointed it with salve".

Next, an urgent call came to him from Benares for treatment of a Setthi's son, who by gymnastic feat. got an entanglement of his intestines, for which "he could not digest anything, nor could he ease himself in the regular way; and looked discoloured with the veins standing out upon his skin". *Jeevaka* performed with remarkable success, another of his difficult surgical operations. "He cut through the skin of the belly, drew the twisted intestines out and showed them to his wife" He then "disentangled the twisted intestines, put them back into their right position, stitched the skin together, and anointed it with salve". *Jeevaka* as usual earned a fee of 16,000 *kahaapanas*.

Jeevaka's next distinguished patient was king Pajjota of *Ujjaini* who had been suffering from jaundice and as a last recourse sent a request to Emperor *Bimbisara* to land to him the services of his accomplished physician. *Jeevaka* went all the way from *Magadha* to *Ujjaini* but found that the patient himself was a very difficult subject of treatment and was worse than his disease. The medicine that he had to prescribe

had to be prepared by boiling up ghee, to which the royal patient had a hopeless aversion. The resourceful physician took recourse to an artifice of "so boiling up the ghee with various other drugs that it took the colour, smell and taste of an astringent decoction". Still, fearing untoward happenings, and anticipating that the King might later vomit the medicine, and detect in it the ghee which he loathed, and then punish the physician, he did not wait for the effects of his treatment but straightaway made arrangements for his escape by securing an order from the King that he should be free to move about and ride on any animal that he chose — "on the pretext of drawing out roots and gathering medicinal drugs". He thus effected his escape by choosing and riding away on the fastest elephant. Meanwhile the treatment began to have its effects, and the King was eventually cured of his illness. Finding that the physician was away, he sent on to him a present of a suit of *Siveyyaka* cloth [explained by *Buddha-ghosha* to be (1) cloth used in the *Uttarakuru* country, for veiling dead bodies when they are brought to the burying ground (*Sivathika*) or (2) Cloth woven from yarn, which skillful women in the *Sivi* country spin].

Besides these difficult cases, *Jeevaka* had to show his skill as physician of the *Buddha* and his brethren. The *Buddha* himself was sometimes his patient. It is recorded that once the humours of the *Buddha's* body were out of order. *Jeevaka* first tried fat rubbed on his body for a few days. This was done by his faithful attendant *Aananda*. It was not, however, found to be very effective. The physician found that there was no alternative but to administer to the patient a purgative. He was in a nice fix to find out what should be the proper purgative for a holy person like the *Buddha* for whom a strong purgative was not considered

by him to be quite becoming. He then hit upon the lotuses as the best remedy for the purpose and got three handfuls of three lotuses which he imbued with various drugs. The lotuses thus treated were then given to the patient to be smelt by him. Each handful thus smelt produced ten motions. After the purgative had its full effect, the *Buddha* was bathed in warm water and was asked to abstain from liquid food for some time until he achieved complete recovery. Sometimes, it so happened that the entire *Samgha* or brotherhood of *Bhikshus* fell ill by taking unwholesome food. For instance, once at *Vesali*, the *Bhikshus* were treated to too much 'sweet food' for a long time, which was supplied by the collective hospitality of the local lady and became very sick with superfluity of humours in their body. Fortunately, *Jeevaka* came to that city in the course of his medical engagements and attended upon them and cured them (*Chulla Vagga* V. 14. 1.)

Antiseptics in Surgery. .

The story of *Jeevaka* throws light on the state of medical profession and practice in Ancient India in the 5th century B. C. First, *Taxila* as then the most famous centre of medical education in the country when it attracted students from such a distant part of India as *Magadha*. *Taxila* had also been through the ages the centre of education in other sciences, in arts and crafts and in the humanities. Secondly, the course of its medical studies extended to a period of seven years but the license to practical examination was passed. Every medical student was expected to cultivate a first-hand knowledge of medical Botany by a study of the medicinal properties of plants as sources of medicines. Thus the foundation of the *Ayurvedic* Materia Medica was laid

in a study of the indigenous drugs of the country. Thirdly, we know that the chief cities of India like *Saaketa*, *Benares*, *Rajagriha* or *Ujjayini* were in no want of skilled physicians who could command heavy fees which would compare favorably with those earned by their successors in modern times. Fourthly, a great advance was made in surgery when the most difficult operations were performed like those upon the skull or the belly, to set right twisted intestines. It may be assumed that the success of these surgical operations depended upon the use of antiseptics. *Jeevaka's* ointments must have been of this character. And, lastly, we may note that the successful physicians of the times had hardly any rest in their professional career when they had to attend to calls coming even from different provinces (My Ancient Indian Education pp. Addition 462—70).

The *Buddhist* Canonical texts are alive to the need of nursing in sickness. In the monasteries, it was laid down that the monks must undertake the nursing of the sick. An example of this precept was first shown by the *Buddha* himself. One day in the course of his daily rounds through *Vihara* he came across a monk lying ill of cholera, fallen in his own evacuations, and unattended by any one. He at once asked his attendant *Aananda* to fetch water and himself washed the monk with that water while *Aananda* wiped him down. Then "the Blessed One taking hold of him at the head and the venerable *Aananda* at the feet, they lifted him up and laid him down upon his bed." The following admonition was then addressed to the monks: "Ye, O *Bhikshus* have no mothers and fathers to wait upon you! If ye, O *Bhikshus*, wait not one upon the other, who is there, indeed who will wait upon you? Whosoever, O *Bhikshus*, would wait upon me, he should wait upon the sick. The patient

is also advised to conform to the following requirements to facilitate nursing; he must do what is good for him, must know the limit of the quantity of food that is good for him, he must take the medicine prescribed for him, must take into his complete confidence the nurse who desires his good, and let him know all about his disease and his condition, whether he is getting better or continues in the same condition or when his bodily pains are too much. Similarly, the nurses required to have the following qualifications he must be able to prescribe medicines, must know what diet is good and what is not good for his patient and serve it accordingly, must wait upon the sick out of a feeling of love and a desire for gain, must not shrink from removing evacuations, saliva or vomit and must be, lastly, capable from time to time of "teaching, inciting, arousing and gladdening, the patient with religious discourse". (Maha Vagga. 8,26; My Ancient Indian Education. pp. 48-49).

Teachers of Aayurveda & medical practice.

Next to these *Buddhist* Canonical works, evidence regarding the progress of *Aayurveda* is indicated in the important work known as *Milinda-Panho* of about first century B. C. It gives the names of the old teachers of *Aayurvedic* Medical Science, viz., *Naarada*, *Dharwantari*, *Angiras*, *Kapila*, *Kandaraggisama*, *Atula*, *Pubbakachchaayana*. Each of these is known for a treatise of his own. The divisions of the subject are given viz., the rise of disease, its cause, nature, and progress, its cure, treatment, and management. The course of medical training is described: A medical student must first apprentice himself to a teacher whom he has to procure by the payment of a fee or by the performance of service. Then he is given a training in holding

the lancet, in cutting, marking or piercing with it, in extracting darts, in cleansing wounds, in causing them to dry up, in the application of ointments", as subject under surgery and "in the administration of emetics, purges, and oily enemas" as subjects under Medicine (VI 2). The successful surgeon is defined as one who is able the most quickly to perform his operation (IV. 3.28). The successful physician is defined as one who is "a true follower of the sages of the old. One who carries in his memory the ancient traditions and verses, a practical man (*Atakkiko*), without the theories (*Vitarka*) resorted to by those ignorant of the practice of medicine, skilled in diagnosis and master of an efficacious and lasting system of treatment, who had collected (from medical herbs) a medicine able to cure every disease (IV. 6.28). A treatment is described of "a wound full of matter and blood, stinking of putrid flesh, in whose grievous hollow the weapon which caused it remains". The doctor anoints it with "a rough, sharp, bitter, stinging ointment to the end that the inflammation should be allayed". When the inflammation goes down and the wound become "sweet", he cuts into it with a lancet and burns it with caustic. When he has thus cauterized it, he is to prescribe "an alkaline wash and anoint it with some drug to the end that the wound might heal up" (IV. 1.33) A treatment of a boil is also described: the surgeon is "to have a lancet sharpened, or to have sticks put into the fire to be used as cauterizers or to have something ground on a grindstone to be mixed in a salt lotion"; i.e, to apply "a stinging lotion" (IV 2 13). Lastly, there is a reference to doctors administering "medicines by way of draughts or outward applications" (IV. 2.17).

We may now turn to the evidence of the *Jeevakas*

which are assigned by Rhys Davids to the 6th and 5th century B.C. in view of the old conditions and the social background which they depict. The physicians of the times are described in the following appropriate words of a *Gaatha*.

"Some carry sacks upon their backs, root-filled
and fastened tight;

They gather healing herbs, they bathe, and
magic spells recites."

(J. IV. P. 361)

There is a reference to the application of oil in the healing of wounds, humps and scars and also to the bandaging of injured parts (*Saatakakanna*...Pieces of cloth)
J. I. 293.3 42.

The medicine for dysentery (*Lohitapakkkhandikaa*) was a broth made of millet and wild rice, mixed with leaves sprinkled with water, without salt and spices. Bad food is taken as one of the causes for dysentery (J. II. 213; III. 144). There is a reference to a skilled Brahman physician who cured the King of Benares of dysentery when all the great physicians of the Court could not cure him. Before treating the patient, he said "Tell me the symptoms of your disease and how it came out; what you have eaten or drunken to bring it on or what you have heard or seen" (II. 213) Special antidotes were known for snake-bite. A method of cure was to extract the venom with some of these or by catching the snake, to make it suck its own poison out of the wound. There was a family of doctors in Benares who were specialists in the cure of snake bite (J. I. 311).

It has been already stated that in the ancient *Aayurvedic* system great importance was attached to the quality

of medicines upon which the success of treatment so largely depended. The means employed to secure it consisted of a careful cultivation of the medicinal plants as the raw-material and source of medicine. An interesting light is thrown on the subject by the definite and unimpeachable evidence contained in one of the inscriptions of Asoka in his Rock Edict II. Asoka takes credit to himself for initiating measures for the relief of suffering of both man and beast (*Mannushya chikitsaa* and *Pasuchikitsaa*). The organisation of these measures depended upon the provision of the necessary accessories which are also indicated in the inscription. These comprised (a) the cultivation of medicinal plants which could yield those herbs (*aushadha*), roots (*moola*) and fruits (*phala*) which were required in the manufacture of medicines in the Government Pharmaceutical Works. This meant that the State in Asoka's time maintained special horticultural gardens specialising the cultivation of plants possessed of medicinal properties. (b) provision of hospitals for the collective treatment of patients brought together in it in place of the individual treatment of patients in their houses, which was not possible for the Government; (c) the existence in the country of qualified medical staff to take charge of these hospitals and physicians and surgeons for the treatment of the diseases of animals, the domesticated diseases of cattle, upon whose health an agricultural country had so largely to depend. It is also stated that where it was found that some medicinal plants were not native to the soil of India, they were imported from foreign countries and acclimatized in the State horticultural gardens to enrich India's medical botany. These might be roots; fruits and herbs.

Ancient Indian Hospitals

A reference to these ancient Indian Hospitals is made

by an eye-witness, the Chinese pilgrim, Fa-Hien, who visited India in the 5th century A. D. in the time of the Gupta Emperor, Chandragupta II. He states: "The elders and gentry of these countries have instituted in their capitals free hospitals, and hither come all poor or helpless patients, orphans, widowers, and cripples. They are well taken care of, a doctor attends them, food and medicine being supplied according to their needs. They are all made quite comfortable, and when they are cured, they go away". Fahien also mentions: "Houses of charity on the road-side where rooms, couches, beds, food and drink are supplied to travellers, while the rich and prosperous inhabitants, vying with one another in the practice of benevolence and righteousness establish in the cities houses for dispensing charity and medicines".

It is interesting to note that some of the religious and charitable endowments of Southern India were made for the establishment of Schools which were also equipped with a hostel for the residence of students and also a hospital. Inscription No. 182 of 1915 states how by the royal grant of *Veera Rajendra Deva* (A. D. 1062) there was established such an institution. The hospital attached to the schools was known as *Veera-Solan* and was provided with 15 beds. The staff and establishment for the school-hostel and hospital comprised one physician in whose family, the privilege of administering medicines was hereditary, one surgeon, two servants who fetched drugs, supplied fuel and did other services for the hostel and the hospital. Among the medicines stored in the hospital are mentioned *Aasa-haritaki*, *Gomutra-haritaki*, *Bhallataka-haritaki*, *Bilvaadi-ghrita*, *Vajra-kalpa*, *Kalyaana-lavana*, and some varieties of *taila* or oils—medicines which are still in use under the indigenous medical systems of the land.

The private charities of the day were also applied for the establishment of maternity homes. This is mentioned in the Madras Epigraphic Report for 1917 (p. 122) recording a pillar-inscription in a *Talug* of Guntur district, of the time of *Kakateeja* (Local Government, Pp 275-278).

Medical Studies in General Education.

We shall now conclude with an account of medical studies at the Ancient Indian educational institutions. We know from Hiuen Tsang the contents of Indian Education of those days. The primary education began with a first book of 12 chapters giving the *Sanskrit* alphabet and the combinations between vowels and consonants. The book was called *Siddham* (from the expression *Siddhirastu*). Next after the mastery of *Siddham*, the child was introduced at the age of 7 to the "great *Saastras* of five *Vidyas*, viz., *Vyaakaran* (Grammar), *Silpastaana Vidyaa* (Manual training in the arts and crafts), *Chikitsa Vidyaa* (the science of Medicine), *Hetu Vidyaa* (*Nyaaya*, logic, the Science of reasoning), and *Aadhyatma-Vidyaa* (Spiritual science)—which according to Watter, includes the metaphysical treatise of the great Doctors of *Abhi-dhamma* (Watters. I. 158).

We thus see here that the study of Medical Science was made a compulsory part of the syllabus for Secondary Education and every student was required to have a knowledge of the elements of that Science. We also see that Education in Ancient India, anticipating the Wardha Scheme, centred round a craft to which it was related. More detailed information on the place of medical studies in the Scheme of Education is given by I-tsing. Education is described by him in its three stages. Primary, Secondary, and

Advanced, which was the stage of specialisation pursued at the Universities.

The contents of Primary Education are thus indicated. It was begun at the age of 6 with a study of first book of reading which is called, as it was noticed by Hiuen T-sang *Siddirastu*. This book gives 49 letters of the alphabet and 10,000 syllables arranged in 300 *Slokas*. This Primer was finished in 6 months.

Then the child was introduced to the second book of reading, the *Sootra* of *Paanini*, containing 1000 *Slokas*, which the "children begin to learn when they are 8 years old and can repeat in 8 months' time". Next follow the books on *Dhaatu* and on the three *Khilas* which the boys would begin when they are 10 years old and master after 3 years' study.

The next book prescribed was the famous *Kaasikaavritti* the best of all the commentaries on *Paanini's Sootras* as stated by I-tsing. It comprised 18,000 *Slokas* and was composed by the learned *Jayaaditya*, "a man of great ability, with very striking literary power", who died nearly 30 years before Itsing's notice of him in his account (i. e., in about 661 A. D.). I-tsing further states: "Boys of 15 years begin to study this commentary and understand it after years. If men of China go to India for study, they have first of all to learn this grammatical work, then other subjects; if not, their labour will be thrown away".

"After having studied this commentary, students begin to learn composition in prose and verse and devote themselves to Logic (*Hetu-vidyaa*) and *Metaphysics*". (*Abhidharmasamuccaya Kosha*).

This shows that I-tsing also confirms the account given earlier by Hiuen-Tsang of the curriculum universally

adopted in India for primary and secondary education of those days. Before the stage of specialisation and advanced post-graduate study was reached every student had to study the compulsory five subjects of study, the five *Vidyaa* thus enumerated by I-ting following Hiuen-tsang—*Sabdavidyaa* (grammar and lexicography), *Silpasthana vidyaa* (arts), *Chikitsaa vidyaa* (medicine), *Hetu-vidyaa* (logic) and *Aadhyatma vidyaa* (science of universal soul, philosophy).

Syllabus of Medical Studies.

Fortunately for us I-ting gives some details of the medical syllabus of those days as a compulsory part of the educational course laid down for all students. He mentions 8 sections making up Medical Science, viz., (1) Sores, inward and outward, (*Salya*) (2) Diseases above the neck (*Saalaakya*) and (3) below it or bodily diseases, (*Kaaya*) (4) Demoniac diseases due to attack of evil spirits, (*Bhoota*) (5) the *Agnya* medicine i. e., antidote or medicine for counteracting poisons (6) Diseases of the children from the embryo stage to the sixteenth year (*Koumaara Bhriya*) (7) the means of lengthening life (*Rasaayana*) and (8) the methods of invigorating the life and the body (*Vaajeekarana*) Itsing further states, "These eight arts formerly existed in eight books, but lately a man epitomized them and made them into one bundle. All physicians in the five parts of India practice according to this Book, and any physician who is well versed in it never fails to live by the official pay". I-ting made a "successful study in medical science, but did not follow it up and specialise in it because he was out on a different mission". But, he explains why the study of medical science was made compulsory in the course of studies prescribed for all including even the monks. "Is it not a sad thing" he asks

"that sickness prevents the pursuit of one's duty and vocation? Is it not beneficial if people can benefit others as well as themselves, by the study of medicine?"

Lastly, I-tsing mentions the principal medicinal herbs then used in India and "the rules on giving medicine" which insisted on fasting as an effective method of cure, by practice of which "each man is himself the King of Physicians and any one can be *Jeevaka*" (Ancient Indian Education, pp. 337-338).

SECTION 1.

The Historical Back-ground

CHAPTER 4

[CONTENTS—I. The brief historical survey of Hindusthan
II—The Society, Varnaasram Dharma III—Arts and Sciences
IV—Greater India, Navigation, Colonization, V—The Four
Aspirations of Life.

I

The Brief Historical Survey of Hindusthan.

[CONTENTS—Aayurveda - Positive Test of Hindu civilization - Aayurveda, the Top Science. Bharatakhanda-Periods of History. (1) Puraatanayuga (2) Aarya yuga. (3) Bauddha yuga (4) Pauraanikayuga. (5) Bhakti yuga. (6) Aadhunika yuga.]

Aayurveda-Positive Test of Hindu civilization.

No apology is required for introducing a brief historical survey of Hindusthan in this book because, as every one knows, many existing books on history often contain incomplete and distorted versions of the true history of Hindusthan. The *Aayurvedic* student must know the *Sampradaaya* of the people. He should be, "*Desa Kaalajna*"—one who understands the environments (i. e.,) all the implications

contained in the two comprehensive words of time and place. He should be able to pay due attention to individual subjects and to properly estimate and appreciate the value of the various phases of the civilizations and cultures of this country.

The brilliance of a gem can be appreciated better when it is properly displayed, by setting the same in a jewel. So also the value and importance of *Aayurveda* can be appreciated only when it is set properly in the midst of the other sciences and contemporay traditions. It is only then that a student can properly appreciate the value of *Aayurveda*. *Aayurveda* is the science of life,—a long, happy and useful life, the life of the individual citizen and also the life of the nation. (Ch. Su. A. I. V 40.) It is the positive test of the civilization of the Hindu and of Hindustan. It is *Aayurveda* that made the nation what it was and what it is to-day.

Aayurveda—The Top Science.

Aayurveda is *Charama Saastra*—the Top Science i.e. the science based on all other sciences relating to *Dharma*, *Artha*, *Kaama* and *Moksha*, which deal with body, mind, intellect and soul, the four-fold constituents of man. The utility of all ancient and modern sciences can be classified under these four heads. The *Aayurvedic* physician should therefore be conversant not with his own science of medicine but all other sciences.

*"Swatantra kusalo anyeshu saastraartheshu-abahishkritah
Vaidyo dhvaja ivaabhaati Nripataadvihapoojitah."*

(S. Soot, 34—13)

i. e. A physician, well versed in his own technical science, and commanding a fair knowldeg of other allied

branches of study as well, is glorified by his King and the nobles, and is like a banner of victory, an ornament to the state. A qualified physician is compared to a skilful helmsman who can take across the waters even a boat lacking in rudders,

*"Vaidyastu Gunavaaneekastaaarayedaataraan Sadaa.
Plavam Pratitarairheenam Karna-dhaara Ivaambhasi".*

(S. Soot, 34—17)

A Vaidya should therefore be an all round scholar and for that purpose, he is enjoined to study the various sciences under respective teachers who are masters of the particular sciences.

Bharata Khanda.

The name of our country was and has been *Bharata Khanda*, the country ruled by *Bharata*. The name India is foreign to our ancient literature. The word 'Hindu' occurs in ancient Persian literature and is first seen in *Padma Puraana*. Subsequently, the name of 'Hindustan' became more current and both the names *Bharatakhanda* and *Hindusthan* have become very familiar to us now. Foreigners introduced the word India which is a corrupt form of the word Hindu. The word Hindu itself is derived from *Sindhu*, the name of the river on the banks of which the *Aryans* first settled.

Periods of History.

We have divided the History of Hindustan into six periods called *Yugas*.

1. *Puraatana Yuga*—From time immemorial to 50,000 B. C.
2. *Aarya Yuga*—From 50,000 B. C. to 1000 B. C.
3. *Baudha Yuga*—From 1000 B. C. to 300 A. D.

4. *Pauraanik Yuga*—From 300 A. D. to 1000 A. D.,
5. *Bhakli Yuga*—From 1000 A. D. to 1858 A. D.
6. *Aadhunika Yuga*—From 1858 A. D. upto the present time.

1. Puraatana Yuga.

From time immemorial to 50,000 B. C.

Avinas Chandra Das a celebrated historian has definitely proved from geological evidence that a vast sea existed between the *Himaalayas* and *Vindhya* mountains. This sea extended in the north up to the Panjab and covered all the area now known as Rajputana, United Provinces, Behar and Bengal. In *Rig-veda* (10—130—5) there is reference to the Eastern sea (*Poorva Samudra*) which must have been this sea. This *Poorva Samudra* described in *Rigveda* cannot be the Bay of Bengal. This is further proved by the existence of a vast desert of sea sand and extensive mines of common salt and sodium sulphate now discovered in Rajputana (Jodhpore). This area must have been the bottoms of the sea at that time. All the geologists including Wadia (Geology of India, 1919) and H. G. Wells (Outlines of History) estimate that 50,000 years ago there was a sea connecting the present Arabian sea with the present Bay of Bengal and separating the northern Himalyan country from Southern Deccan. They are of opinion that this sea was converted into land within a period of 20,000 years. From this evidence, it was concluded that the date of *Rigveda* must have been earlier than 50,000 years from this day.

2. Aarya Yuga.

50,000 B. C. to 1000 B. C.

[CONTENTS—Aarya yuga—Houses—Bath-rooms and

Drainage—Temples—Hospitals—Human Figures—Engravings and Seals—Centre of Civilization— Commercial Intercourse— The Cradle of the Human Race—Descent of the Dravidians—Hindu-Almanac - Federated States of Hindustan—Sanskrit Language, a Unifying Force—Political Structure of Hindustan—Religion—The Vedas—The Upanishads—Aayurveda in Vedas.]

At first the *Aaryans* settled in the Punjab and this stage is reflected in the *Rig veda*. They gradually pushed further to the East as far as *Videha*—Behar and *Vindyan* in the south, over-stepping the mountain barrier in certain directions. The term *Aarya* means noble. It denotes more a quality rather than a class. We can see that these people were claiming to be more civilized than the *Kiraatas* and other people who lived there at that time. Recently the remains of a civilization of a people who lived in the Indus Valley have been unearthed at *Mohenjo-daro* (Sindh) and *Harappa* (Punjab). The date of this civilization has not been definitely fixed. After the excavation of the foundations at these places, the theory that the *Vedas* were only 3000 years B. C. has been exploded. From the description of the Eastern Sea—*Poorva Samudra* and of the deserts described in the later portions of the *Vedas*, it is evident that the date of the earlier portion of the *Vedas*, were over 50,000 years.

Houses.

Mohan-jo-daro literally the mounds of the dead is now nearly 70 feet above the ground level at that place. The remains are in 7 layers extending to a depth of 120 ft. At *Harappa* a house was 162 ft. long in its foundations and contained rooms which were 57 ft. long and 17 ft. broad, with small rooms in between. There are steps leading to one of the larger halls from below, and in the sides of the halls,

there are rooms *or houses*. The walls are of burnt bricks and the stouter ones are 9 ft. at the base. Two brick kilns have been unearthed. Wedge shaped bricks were used around wells.

Bath-rooms and Drainage.

There are bath rooms and an elaborate system of drainage. One huge drain at *Mohanjo-daro* is 6 ft. high inside and is covered by projecting bricks from the sides and is built artistically. There are nice bath-rooms built so as to have a definite slope towards the street side from which a channel leads all the water into the street pipe, which is connected with the street drain. In some places, pipes leading from bath rooms in the upper storeys are connected with these channels, so that the perfect and elaborate system of drainage leading from the houses and connecting the channels to the street drains, which take away the drainage to the end of the street has been discovered. One of the texts of *Yajur-Veda* (*Taittiriya Brahmana* III) refers to the dismantling of a brick wall of the *Aaryas* by the enemies. There are wide under ground cellars which afforded retreat in the summer months. The thresh-olds of houses are considerably higher than the street level showing that there was evidence of anxiety from floods. Floods were known in the earliest books of the *Rig-veda* and one hymn in the seventh book records that the floods on the *Raavi* abated in response to the prayers of *Vasistha*. There were court-yards in front of the houses. The door opened on the inside and not on the varandahs. The inference is that this civilization might have belonged to the *Vedic* period.

Temples.

Some of these elaborate edifices may really mean

temples. A pillared hall (*Mandapam*) had its roof supported by 20 brick-pillars, disposed in four rows of five each. The chief seat was in the middle of the south side of the hall. But, no trace of an image or image-base has come to us. We may assume that the idols, if any, were made of wood or other perishable material.

Square niches in the walls of two rooms in *Mahenjo-daro* give this portion the look of a temple. The large halls of *Harappa* cannot be explained otherwise, than as halls of sacrifice or of congregational worship. Evidence of rounded street corners possibly point out to processions along the streets.

Hospitals.

These buildings remind us of the description of the construction of Hospitals - *Aaturaalayas*, with strong walls, spacious rooms, high buildings, fitted and equipped with all comforts and separate accommodation for kitchens, bath-rooms, lavatories etc., described in *Upakalpaniyaadhyaya* in *Charaka Samhitaa*, Book I-Ch. XV.

"Dridham, Nivaatam, Pravaataika Desam, Sukha Pravichaaram, Anupatyakam, Dhoomaatapajalarajasaam-anabhigamaneeeyam - anishtaanaamchasabda - sparsa - rasa - roopagandhaanaam, Sodapaanolukhalamushala - Varchah - sthaana - Snaanabhoomi - Mahaanopetam, Vaastu - Vidyaa - Kusalah - Prasastam - Grihameva, Taavatpoorvamupakalpayet".

i. e. In the first place, a mansion must be constructed under the supervision of an engineer well-conversant with the science of building mansion and houses. It should be spacious and roomy. The element of strength should not be wanting in it. No part of it should be exposed to strong

winds. Every portion should be open to the currents of fresh air (i. e.) freely ventilated.

It should be such that one may move or walk through it with ease. It should not be exposed to smoke, or the heat of the sun, or dust, or injurious sound, touch, taste, form and scent. It should be furnished with a well, with pestles and mortars, privies, accomodations for bathing, and for kitchens (Ch. Soot. 15-6).

Human Figures.

The men have their hands about their knees in figures of both *Harappa* and *Mohenjo-daro* and some of them have the *Naaga*-hood. The *Nijaanuka* posture of men (hands about the knees) is described in one of the later *Vedic-texts* (*Taittiriya Aaranyaka* 1-6). One of the figures on the seats is cross-legged in meditation and has been interpreted as an Hindu God in pose. The curious half-kneeling posture with the right knee raised is that exactly used by the *Hindus* to this day at the rites to their *Pitris*. The hands rest on the knees between which a fold of the skirt-like garment is stretched (plate 99 fig. 41). The *Upaveeta* mode of dressing, where the left arm and hand are shapeless, and are hidden beneath the shawl and the right arm and hand are bare as the shawl is under-neath, appears to be the prevailing mode of wearing robes (plate 100-1-3) This mode was initiated in Hindusthan in the later *Vedic* age. (*Taittiriya Aaranyaka* II. 2). Plate 98—fig—I, shows the Hindu *tilaka*-mark in the centre of the forehead as well as *Upaveeta*-holy thread.

One of the female figures is suckling her baby, and another clasping something at her breast and a third is

apparently a goddess fighting with a lion or a tiger. The upper arms are covered with armlets right up to the shoulder, as is now the fashion with newly wedded women of Sindh and Rajaputana. The women were semi-nude. The attenuated waist and the exaggerated hips are truly Indian. The trefoils and circles on the dhoti look prominent and were sewn and not woven. The human statuary does not resemble that of any other country.

Engravings and Seals.

In addition to other engravings of tigers, crocodiles, elephants, and tortoises and antilopes, which are found on the seals and on the pottery, we also find the pipple tree (*Asvattha*), which is the tree of eternity in *Vedic-texts*. It is the tree of wisdom of the *Buddhists*. But, the most interesting animals on the seals are the horse and the humped bull. The hump is described in numerous *Vedic-texts* (*Reg-Veda* Book X). Toy Carts (*Mrichhakatikas*), one made of bronze and another made of pottery are found in the excavation, so also the interesting symbols of the wheel and the *Svastika* on several seals. The symbol Swastika migrated from India to all parts of the ancient World. In one case, the obverse is an involved sign of triangles, in another; there is a design of squares.

Centre of Civilization.

"*Etaddesa prasootasya Sakaasaadagrajadmanah
Svam Svam Charitram Siksheran Prithivyaam
Sarvamaanavaah*"

(Manu 2. 20).

"The different races of the earth derived their respective cultures and history from the teachings of great men that flourished in this country". This statement of *Manu* appears

to be very true, when we see the variety of the relics that are found in these ancient excavations. Migrations from here would best explain the spread of civilization from Hindustan and this is corroborated by the known facts in Asiatic Ceramics (pottery).

Commercial Intercourse.

There is no doubt that there was intimate connection between India, Messopotamia and other parts of the ancient cultured world. There were connections, with South India from which the pearl, conch and other materials should have come.

The Cradle of the Human Race.

The wide extent of civilization and the entirely Indian character of the excavations show that the migration of the human beings started from the East to the West.

Archaeological evidences show that the present Sindh, Africa, Australia, including Southern Hindustan, Ceylon and the Islands of Malaya together formed a big continent called Lemoria. A large portion of land belonging to this area is now under water. Sir John Ivans believes, as a result of his investigation in relation to different races that the Northern and Mediterinian races proceeded to those parts of the globe, which they now inhabit, from Southern India. Ancient Egyptian tradition also is to the effect that their original home was Punt eastwards across the seas. There is no doubt that there was commercial intercourse between the Tamil Country and Mesopotamian valley and that the trade of South India extended to Egypt three or four thousand years before Christ. The traditional accounts of the old Tamil Classics tell us that an angry Sea swept away the *Pahruli*.

river, several ranges of hills and a goodly portion of *Paandya* territories carrying the accumulated literary treasures of several centuries. The literary academy of *Madura*, the last *Sangham*, is said to have lasted for a period of 1850 years, during the reign of 46 *Paandya*-kings and set its seal of approval on the composition of 449 poets. The last of the *Paandya* kings referred to in the *Sangham* works ruled over South India some time about the end of the second Century A. D; At the time of the *Mahaabhaarata* War, there appear to have been political and social connections between North and South India, and the *Paandya* kings trace their relationship to the *Paandavas*. From all these traditional accounts and the stories entering round the Sage *Agastya*, it is quite possible that South India was very old.*

The *Sumeru-Accadian Abamite-theory* by which the existence of linguistic and ethnic affinity between the Tamilians and the early inhabitants of the *Euphrates-Tigrice Valey* supports the assertion of the Geologist of the existence of Indo-African-Australian continent. The archaeological finds at *Harappa* and *Mohen-jo-daro* may throw fuller light on the racial and commercial connections of all these people.

Excavations of Adichannallore in the Tinnavelly District give evidences in some quantities of the existence of Paleolithic man and a large abundance of the neolithic remains distributed over centres widely apart indicates that South India was geologically older than other parts of the world and that it was fairly occupied by man at that time and that he has continued to be there ever since. Geologists are of opinion that man should have lived in this area between

* Cultural Heritage of India Vol. III. P. 678.

the periods of five hundred thousand and fifty thousand years before Christ.

Descent of the Dravadians.

Some tribes of Aaryas appear to have left the earlier settlements in *Aaryaavarta* and to have travelled eastwards along the low lying Sub-Himalayan tracts as far as Bengal and to have turned South-wards round the Eastern ranges of the *Vindhyaa* Mountains and to have proceeded further south along the east coast as far south as the *Kanyaakumaari* (Cape Commerin). A very strong evidence of their travels towards the East and then South is afforded by the settlements of these people, speaking a common language, colonizing here and there along the route. Even to-day, we find common words in the spoken languages of certain classes of people residing in Baluchistan, (*Brahui*) language, in the Bengal in the East and in Orissa, the Andhra country and the Tamil Land in the South.

The theory of this exodus of these tribes from the *Aaryaavarta* first towards the East and then South also supports the theory of the existence of the sea between the southern portion of *Aaryaavarta* and the *Vindhyaa* mountains as stated in the *Rig-Veda*. it is this sea that prevented them from having direct access southwards across the *Vindhyaa* mountains until a very late period.

Hindu Almanacs.

According to the Hindu calendars, the current 1943rd A D year is counted as 5043rd year from the beginning of the *Kaliyuga*.

The current year *Swabhaanu* is the 5043rd year in the

1st *Paadda* or quarter of the *Kaliyuga*, which belongs to the 28th *Mahaayuga* of *Vaivasvata* manvantara, the seventh *manvantara*. (See Puraanika Yuga). *Brahma*, the creator, is now in *Swetavaraahakalpa*, during the 1st day of his life, the total duration of his day being calculated as 4,32,00,00,000 years i.e., 1,000 *Mahaayugas*.

The age of creation up till now is 195, 58, 85, 043 years.

The calculation of the geologists approaches this calculation very nearly as they also estimate the beginning of creation at about 2,000 million years.

Federated States of Hindusthan.

During the vast period of the complicated history of Hindustan, it is difficult to separate one race from another but we can say that the whole of the modern civilization of Hindustan is over-whelmingly Aryan and that any pre-existing civilization was assimilated into this civilization. *Hindustan* was a federation of 56 states (or political divisions) having fifty six languages, corresponding to these states which existed from very ancient times. These states were—

- | | |
|-------------------------|-------------------------------|
| (1) Anga (Monghyr) | (2) Vanga (Bengal) |
| (3) Kalinga (Orissa) | (4) Kaalinga (Greater Orissa) |
| (5) Kaasmira (Kashmir) | (6) Kaambhoja |
| (7) Kaamaroopa (Assam) | (8) Sauvira |
| (9) Sauraashtra (Surat) | (10) Mahaaraashtra |
| (11) Bangaala | (12) Magadha |
| (13) Maalava | (14) Nepala |
| (15) Kerala | (16) Chola |
| (17) Paanchaala | (18) Gauda |
| (19) Malayaala | (20) Simhala |
| (21) Dravila (Draavila) | (22) Karnaata |

- | | |
|--------------------------|-----------------|
| (23) Naata | (24) Karvaata |
| (25) Marvaata (Maarwar) | (26) Paanaata |
| (27) Paandya | (28) Pulinda |
| (29) Aandhra | (30) Hoona |
| (31) Dasaarna | (32) Bhoja |
| (33) Kukkuru | (34) Kuru |
| (35) Gaandhaara | (36) Vidarbha |
| (37) Videha (Mithila) | (38) Baahlika |
| (39) Barbara | (40) Kekaya |
| (41) Kosala | (42) Kuntala |
| (43) Kiraata | (44) Soorasena |
| (45) Sevana | (46) Tenkana |
| (47) Konkana | (48) Matsya |
| (49) Madra | (50) Paarsva |
| (51) Ghoorjara (Guzarat) | (52) Yavana |
| (53) Jaalandhra | (54) Saalva |
| (55) Chedi | (56) Sindhuvati |

*"Sindhuvatyaaadyaneka Viseshadesa Bhaashaa
Bhoomipaala chitrita Bharata Khande"*

The *Mahaasankalpa* recited at the marriage ceremony contains the traditional history of the various States that comprise the whole country called *Bharat-Khanaa*. There are different readings in this *Sankalpa*. The *Digvijayas* and *Asvamedha Yajnaas* performed by different *Chakravarties* (Emperors) only meant the suzerainty of the emperor over others, but not absolute sway. Each State had his own internal laws and administrations.

Sanaatana Dharma—Eternal Stream.

Although the area of Hindustan is nearly equal to the whole of Europe except Russia, it is geographically and

politically one country. *Hinduism* represents the culture of the Hindus, nothing more nothing less.*

All the various sects and religious systems of Hindustan that find shelter in its bosom accept Hindustan as their sacred land, the land of their saints, heroes, and martyrs.

They consider it their *Punyabhoomi*, *Devabhoomi* and *Karma-bhoomi*. The *Sanaatana Dharma* or the eternal stream of Hinduism flows continuously in this land and although many small streams and tributaries also flow into it, the main stream is one that is common to all. This huge stream absorbs into it and assimilates like the sea receiving and assimilating the small and big rivers, so that the individuality of each disappears after assimilation into the general whole. As an illustration of it, may be quoted the *Mahaasankalpa* given above that is recited at all marriages from *Kanyaakumaari* to *Kailaasa* from the unknown times. (Vide Kalpa Sootraas). all sections of people pray to the same Gods, *Rama*, *Krishna* etc., although in different forms, read the same fables and epics.

The same rivers and Tirthas are sacred to them. What other evidence of oneness can there be. All are proud to belong to *Bharat-Khanda* and hold *Hindustan* as their sacred *Janma-bhoomi*. They have one civilization common to all of them. They may claim to belong to as many nations as there are languages but they all belong to one State—the Federated states of Hindustan.

* The regional and linguistic structure of India Cultural Heritage of India Vol III. Bhaaratēya Itihaasa ki Rooparekha by Pt. Jaichanda vidyalankara Kashi Vidyapitha. Benaras U. P.

We all sing together the same song composed by one of our great poet Md-Iqbal—

“Saare jahaan se achhaa Hindostaan Hamaara
Ham bulbulen hain iske, yih gulistaan Hamaaraa
Parbat woh sab se unchaa hamsaaya Aasmaankaa
Woh santari Hamaaraa, woh paasabaan Hamaaraa
Godi men khelati hain iskee hajaaro, nadian
Gulsan hai jiske damse raske jahaan hamaaraa
Mazahab nahin sikhaataa aapas me baira karanaa
Hindi hain Ham, watanhai Hindostaan Hamaaraa”

i. e. The finest Country in the world is our India. We are its nightangles, it is our rose garden. The highest mauntain range, the neighbour of the sky, is our sentary and our protector; In its lap play thousands of rivers.

Which make of it a garden this is the envy of the world; Religion does not teach us to bear enmity towards one another

We are Indians and our Country is India.

Infact, we now find that many of these States gradually merged into each other, so that we have only a dozen main linguistic Provinces cevering the whole land,

Sanskrit Language-A Unifying force.

All the 56 languages are derived from *Sanskrit*, though to-day, the people speaking one provincial language, cannot understand those speaking any other provincial language. “*Sanskrit* is a key for a vast store house of knowledge. A wide study of the *Sanskrit* language and literature, by the rising generations would contribute considerably to ameleorate communal dissensions and provincial antagonisms. *Sanskrit* is the cementing and unifying force and is the crea-

test common measure of all the Indian languages." (The Hon. Mr. Patanjali Saastri's Lecture 10-8-43)

Political Structure of Hindustan.

The political structure of Hindustan may be said to have been laid in the *Vedic* period and even to-day, it remains almost the same as in those early times. Their social organisation at that time was tribal. The people were divided into a number of tribes, which were called *Janas*. All those people, who spoke the same language and who had the same habits and customs, lived in a tract of country which was called *Janapada*. The people of every *Janapada* are more or less an independent nation. Repeated waves of *Aarayan* immigration had inundated the whole country and by amalgamation, conquest or other means, the whole of Hindustan including Ceylon came to be considered as one land called *Bhaarat Varsha* comprising as many as 56 *Mahaajanapadas* or *Raajyas*, which were represented in the *Mahaabhaarat* war. The river *Kaaveri* in the South became as sacred as the *Ganges* and *Kanchi* became the Southern *Kaasi* (Benares).

Pancha Draavidas and Pancha Gaudas.

The *Pancha Draavidas* and the *Pancha Gaudas* with their respective languages mark out to day the ten important divisions of Hindustan divided on language basis.

The *Pancha Draavidas* are 1. *Aandhras*, living in the Telugu country including Hyderabad, and Mysore. 2. *Tamil* in Tamil land. 3. *Kanaries* living in *Karnaataka*. 4. *Mahaarastras* and 5. *Gurjaras* living in their respective native lands. The Province of *Mahaarastra* was carved out of the Telugu and *Karnaataka areas*. The *Malayaalies* belong to the Tamil section.

The *Pancha Gaudas* are 1. Saaraswata in Kashmere and Punjab. 2. Kaanyakubja in United Provinces and Bihar. 3. Maithila in Bihar. 4. Vanga in Bengal and 5. Kaalinga in Orissa. The chief languages of Hindustan to-day, beginning from North West Frontier, are 1. Pustu, 2. Punjabi, 3. Hindi (Hindustani) 4. Bengali 5. Uriya, 6. Aandhra 7. Taamil, 8. Kanaarese, 9. Malayalam, 10. Mahaaraashtri, 11. Gujaraati, Sindhi.

These linguistic divisions should be kept in mind in any national reconstruction of India, because the life of the nation in the long run depends on the cultural development through their own languages.

Religion.

The religion, disclosed by the finds at *Harappa* and *Mohen-jo-daro* shows a variety of grades and complexities of social life. The central hall of *Harappa* is probably an evidence of a communal life, of common sacrifices and public worship. The numerous figures remind one of the sacrificial posts. In the Madras museum, there is a specimen of the ancient sacrificial post of wood and the central pillar to which the victim was tied resembles the "chessmen of the finds".

Side by side with the religion of ritualism, there is evidence of iconism (idol worship). In the *Rig-veda* 2-33-9 the transition from verbography to iconography in Vedic religion may be noticed in various hymns. "*Bathru* shines with golden ornaments". "Decorate *Indra*, and *Agni* with ornaments" *Rig Veda* 1. 21. 2). These are suggestive of a kind of idol-worship even in the *Vedas*. There are figures of *Pippal* trees on several of the seals. It is the Tree of Eternity in the *Vedic* religion.

On one seal there is a cross-legged figure of a Deity with *Naaga*-worship on either side and *Pippal* leaves over the figure. There is another of a Goddess fighting with a lion possibly *Durgaa*.

Side by side with these carvings, are found figures showing attempt at spiritual attunement and realization of the Infinite through *Yogic* practice. One marble statue has the head, neck and body quite erect and half shut eyes fixed on the tip of the nose. Another is dressed in *Upaveeta* fashion with a broad belt of cloth passing over the left shoulder and under his right arm. The shawl has figures of the *Bilva* leaf, the most sacred material for worship of *Siva*. The philosophy of the age crystallised in the discipline of *Brahmacharya*, involving great sexual restraint.

There is hardly any evidence in the finds of any indecent, ugly symbols, bloody sacrifices, drunkenness, and dancing to lewd songs.

On the whole, the evidence shows that various kinds of worship existed in one and the same place and at the same period.

In one corner, we see *Yajnas* and sacrifice of animals and in another *Yogis* who attempt to attain *Moksha* by renunciation of *Karma*. A visitor to these excavations will find that there is very little change in the civilization and customs of our country between those ancient days and our present time. There was religious toleration and every one was allowed to think and worship in his own way.

"*Ekam Sat Vipraah Bahudhaa Vadanti*", (*Rig-Veda* 1-164.) The truth is one, the sages describe it in many ways. Evidently the prominence of *Karma Kaanda* began to wane and the influence of the *Upanishads* was waxing at the time, these cities prospered in Hindusthan.

The Vedas.

The Term *Veda* literally means knowledge and as knowledge of God, *Veda* is eternal just like gravitation. Secondly, the term *Veda* is applied to the four great works viz. *Rig Veda*., *Yajurveda*, *Saama Veda* and *Atharva Veda*. Each of them is divided into 3 parts "1. *Samhitas* (sacred texts). 2. the *Braahmanas* (commentaries) and 3. *Aryanyakas*. (forest books). The *Samhitas* and *Brahmanas* are loosely designated as Karmakaanda—the portion pertaining to rituals; and the *Upanishads*—the portion dealing with supreme knowledge.

Although the *Vedic Aaryans* worshipped many Gods, *Indra*, *Agni*, *Varuna* and others, they realised that each God is an aspect of the one God, the Highest God, the *Brahma*.

Self sacrifice is the keynote of the spiritual life of the *Vedic* sages. The supreme being sacrificed himself in creating the universe (*Furusha Sookta*). They looked upon the entire evolution of the Universe as the performance of a great sacrifice. The spirit of sacrifice, restraint and harmony through love and unity are the dominant factors of the cultural life of the *Aryans*. One in many and unity in variety, is the message of *Vedic* India.

"Assemble, speak together, let your minds be all of one accord.....Let all priests utter the *Mantras* in a common way. Common be their assembly, common be their mind, so be their thoughts united.....United be the thoughts of all, that all may live happily, that ye may all happily reside.

"Samgachbhadhvam, Samvadadhvam"

Samvo Manaamsi jaanatam,

Devaa Bhaatan yathaa Poorvam.

Samjanaanaa Upaasataam, Samaano Mantrah

Samiti ssamaanee Samaanam Manah,
 Sahachitta Meshaam,
 Samaanee Iha Aahuti, Ssamaanaani Hridayaani Va
 Ssamaanamastu Manah, Yatha va ssahasaati"

Culture of the Upanishads.

The Upanishads come under the *Jnaana Kaanda* of the *Vedas*. Their number is given as 108 but the most important are the following ten on which *Sri Samkaraachaarya* wrote his commentaries. 1. *Isa (vasy)*. 2. *Kena*, 3. *Katha*, 4. *Prasna*, 5. *Mundaka*, 6. *Maandookya*, 7. *Taittiriya*, 8. *Aitareya*, 9. *Chhaandogya*, 10. *Brihadaaranyaka*. The word *Upanishad* means an approach to the knowledge of the Reality, expounded in the books of that name.

The central theme of the *Upanishads* is to seek unity in the midst of diversity, "What is that by knowing which everything in this universe is known?" (*Mundaka* I. i. 3). The answer to it is found in the conception of God or *Brahman* (the Greatest) as the Ultimate Cause of the universe. "From whom indeed these beings are born, through whom they live, and unto whom they return and merge in" (*Tait* III. i). Since the effect is not different from the cause, it is possible to know the universe by knowing *Brahman*. "As by knowing one lump of clay, all that is made of clay is known; for the modification is but an effort of speech, a name, and the only reality in it is clay" (*Chhand.* VI. i 4). Two things should be noted here. The first is that the universe is not considered to have come out of zero or non-existence. The second thing to be noted is that the universe is conceived as returning in the end to God, the source from which it sprang. Thus even in the dim ages of the *Upanishads*, not only evolution, which is the watch word of modern science,

but also involution. i. e. the retrograde march of the universe to its primal state, was whole-heartedly believed in. In this latter point, the *Upanishads* seem to have gone ahead of modern sciences. So, not only have they no ground for quarrel with sciences, but on the contrary, they welcome its contributions towards a better understanding of their ancient discoveries by the modern mind. The religion of the *Upanishads* is par excellence a scientific religion. The appeal of the *Upanishads* is universal. They call upon every man and woman, in what-ever station of life, to stand up and assert their divine heritage. In this, they recognize no limits, geographical, racial or any other. They are the greatest unifying factor in the world for all time. The regeneration "of man the brute into man the God", is their ambitious programme. They only, of all the religious literatures of the world, give us the rationale of morality—why we should do good to others. Because, we are all one."

The well being of the modern world depends on a proper understanding of the *Upanishadic* teachings and on their sincere application to the practical problems of our daily life. Thus only can materiality, which is the common enemy of the world, be conquered, and love instead of hate be our guiding principle. (Vide, Lessons-in *Upanishads*—Chapter IX. Section 2).

The theory of evolution of the Universe given in *Ayurveda* is based upon the *Upanishads*. From this very *Atman*, which is identical with That (*Brahman*), the ether was produced, from the ether air, from air fire, from fire water, from water earth." These elements combine in different proportions to produce all bodies, and also minds. [Mundaka I. i. 6. II. i.]

"Know the soul as the rider, the body as the chariot, the intellect as the charioteer and manas as the reins. The organs are called the horses, and the sense-objects the roads for them. The soul, joined to the body organs and mind, is designated by the sages as the experiencer (*bhoktri*). The objects are higher than the organs, manas is higher than the objects, the intellect is higher than manas, mahat (cosmic intelligence or *Hiranyagarbha*) is higher than the intellect, the unmanifested *Avyakta* (the causal state of the universe), is higher than *mahat*, and the Infinite Being (i. e. *Purusha*, or *Aatman*) is higher than the unmanifested. There is nothing higher than *Purusha*, That is the limit the Supreme Goal".

Aayurveda in The Vedas.

The word *Aayurveda* is not seen as such in the *Vedas* but a good portion of the *Veda* is devoted to promotion of long life, prevention of disease and to medical treatment. In fact, the foundations of *Aayurveda* may be said to be well and truly laid in the *Vedas*. *Aayurveda* is recognised as an *Upa-Veda* or branch *Veda*. Refer list of diseases in *Atharva Veda*, P. 39 supra. The *Aryans* lived a simple life and had cattle rearing and agriculture as their chief occupation. They were particularly free from the business, worries and the *hurry-burry*., which characterises the professions of the modern days. They therefore lived the full span of hundred years. Their prayers were all for good rains, bumper crops bright sunshine, pure air, fat cows, strong and lustrous bodies and alround prosperity. The value of Sun-light as promoter of health and destroyer of germs and diseases was recognised *Rik-Veda*-A. I. 5-7. V. 6.) and as cure for Jaundice and Heart diseases— "*Hridrogam-mama Surya Harimaanancha Naasaya*" (*Rig. Veda*-A-I-5-7-V. 11). Similarly, you find in the *Vedas* references to Chromo - therapy, Hydrotherapy,

Thermal and Surgical treatment (*Rig-veda* A-1-A-5., 5-6 and V. 18-23). (*Rig-veda* A. I., A-11., S. 2., V. I), (*Reg-veda*-116-16., 1-112-8., 1-116M15). There are also names of midwives who flourished at that time namely Vide-Cineevaali and Saraswati in *Atharva Veda*. There is reference to *Tridhatu* (*Rig-veda* in 1-7-4-6). *Rudra* was addressed as the physician of physicians. (*Rig-veda* - 2-33-7-12) : (5-42-11, 7 46-3 : 1-114-5). It would appear that physicians in those days were well paid (*Rig-veda*., 10-97-4) Refer also to History of *Ayurveda* Chapter V.

3. Bauddha Yuga.

1000 B. C. to 300 A. D.

[CONTENTS-Bauddha Yuga-The Mauryan Empire-(1) Vedaangas-Sootras Gotras-Paanini (2) Smritis-Evolution Theory-Social Organisation - Varnaasrama Dharma-Matsya-Nyaaya-Hypergamous Marriages - Aayurveda in Smrities-(3) The Epics-Culture of the Raamaayana-Military equipments-Democratic institutions-Scope and importance of education-Many sided nature of Sacrifices-Redistribution of riches-Raama's character-Conclusion-Mahaabhaarata-Bharata and Mahaabhaarata-Democratic and Republican Institutions-Army-Nayy-The law of Warfare-Medical and Surgical aid during Wars-Status of Women-Religion in Mahaabhaarata-The law of *Karma*-Sri Krishna and Arjun-Golden Age - Ahimsa an Spirit of toleration-Aayurveda in Epics. (4) Age of revolt-Buddhism-Jainism-Buddhism and Jainism, only Branches of Hinduism-Divine of Buddhism-Aayurveda in Bauddha Yuga.]

Buddha was born in the year 623 ; B. C. and began to preach his religion from 588 B. C. But, as it is necessary to study the condition of Hindustan prior to his birth, we have

started this period from about 1000 B. C. and closed it by the events which caused its decline at about 300 A. D.

The Mauryan Empire.

The fifth century B. C. is marked by a struggle for supremacy which culminates in the complete ascendancy of Magadha. One by one all the important States were absorbed in the growing kingdom of Magadha, till by the middle of the fourth century B. C. the whole of the Northern India, excluding the Punjab and Sindh, formed one united empire under the Nanda kings of Pataliputra. The empire was still further expanded by the Mauryas, who succeeded the Nandas. Chandragupta, (321 B. C.) the founder of the dynasty, was no doubt helped in his task by the devastating raids of Alexander the Great (327–325 B. C.) in the Punjab and Sindh, which brought the need of political unity home to the suffering millions. By his successful struggle against Seleucus, the great general and successor of Alexander in his Asiatic dominions, Chandragupta extended his dominions, still further to the west up to Heart in Afghanistan. Gradually, the Mauryan empire pushed its frontiers further to the South, and during the reign of Asoka 270–230 B. C.), the grand-son of Chandragupta, its southern boundary was fixed along the Pennar river near Nellore.

The Aandhra Empire.

The name *Aandhra* first appears in *Aitareya Brahmana*. From the descriptions given therein, it would appear that the *Aandhras* were a tribe of *Aryans*, who for some reason or other quarreled with the other tribes and emmigrated from the *Aaryaavarta* and settled themselves among the *Un-Aryan* tribes in the *Dandakaaranya* in the South of the Vindhyaas. There are descriptions of Aandhra Raashtra in the Raamaayana and the *Mahaabhaarata*. There are references to the *Aandhras*

and *Draavidas* in *Charaka Samhitaa* (*Indriyasthaana* 5-29). About the year 300 B. C. Magas henes, Greek Ambassador at the court of Chandragupta, the Mauryan Emperor, describes that the *Aandhra* Empire was only next to the Mauryan Empire. At that time, there were thirty forts, one lakh infantry, two thousand horses and one thousand elephants. After the death of Asoka, and the disruption of the Mauryan Empire, the Aandhra kings established themselves finally and ruled over vast area extending from the mouths of the Krishna and Godaavari on the east, to the Arabian Sea on the west and occupied all country as far as *Magadha*. 30 Aandhra Kings ruled for 456 years during which period *Buddhist* pilgrims were very much encouraged. The famous University of Amaraavati on the banks of the Krishna flourished during the time of Naagaarjuna, the founder of the *Mahaayaana Buddhism*. (1st century B. C.). He is said to have lived at the University, at *Sri Sailam* and at Naagaarjuna Konda, a hill in Guntur District, named after him. After 3rd century A. D. the whole history of Hindustan was changed by successive invasions of the country by foreigners and the Aandhra Empire fell to pieces. The Greeks (from Bactria), the Parthians, the Sakaas, and the Kushanas poured in millions into India and established political supremacy in the west and north-west. This is probably the period when the present editions of *Charaka* and *Susruta* were completed. These are references to the habits and customs of all these peoples in the text. (Chachi-30-299.) (Su, Soot. 6.)

The rest of India was divided into a number of small kingdoms. The political disintegration and foreign domination were perhaps the price that Hindustan had to pay for the peace propaganda of Asoka. After five hundred years of

this chronic misery (200 B. C. to 300 A. D.) the Guptas rose to power (320 A. D.) and again established a mighty empire.

(1) Vedaangas.

1000 to 500 B. C.

The date of Paanini, the author of Grammar has been fixed by Dr. Bhandarkar as 750 B. C. From the *Vedis* period upto the this time, there was a lot of literature, the dates of which are not known. Vedas are called *Srutis* i. e. they are revealed, they are *Apaurusheya*, authors are unknown. The literature belonging to next period, the authors of which are known, though their dates are unknown, come under the heading of *Smritis*. i. e., that which is remembered. The authority of the *Smritis* is next to that of the *Srutis*. The *Smritis* were first in the form of *sootras* or short aphorisms.

The *Vedaangas* are the six limbs of the *Vedas*, and are called *Shadangas*. They are 1. *Sikshaa*—Orthography or pronunciation of the *Vedas*. 2. *Vyaakarana*—Grammar, 3. *Chhanda*—Prosody, 4. *Nirukta*—meaning of Vedas, 5. *Kalpa*—Rules of rituals—6. *Jyotisha*—Astronomy.

These were all formulated during the period, say-1000 to 500 B. C. The science of Geometry was developed in Hindustan even before this period. Triangular, rectangular and circular structure had to be constructed for the performance of *Vedic* sacrifices. The decimal system of calculations was known to the Aryans, and this was copied by the Arabs and then by the Europeans. The calculation of time, of eclipses, comets etc., was also known.

Sootraas.

The *Sootraas* are divided into three classes— 1. *Srauta Sootras*, relate to sacrificial rituals. 2. The *Grhya Sootras*.

relate to the duties of the housholder, the *Shodasa karmas* or the 16 kinds of *Vratas* or *Samskaaras* that every man has to perform. 3. *Dharma Sootras* relating to the laws of conduct for the regulation of the society.

Different sects of Aryans had different sets of *Sootras* according to the *Rishis* to whose clan they belonged. The marriages in the families belonging to different *Sootras* are to be performed according to the rules prescribed by their respective *Rishis*. For example, the *Rig Vedis* follow the *Asvalaayana* and *Hiranyakeshi Sootras*. The *Yajur Vedis* follow *Aapastambha* and *Baudhaayana Sootras*, *Kaatyayana Sootras* are followed by *Saama Vedis* and so on. The date of *Baudhaayana* was approximately fixed at 500 B. C. and of *Aapastambha* 300 B. C. (Gita Rahasya).

Gotras.

Gotra is a clan of Aryan with a specific name. Each *Gotra* has what is called a *Pravara* i. e., the name of *Rishis* or seers who are stated to be their ancestors. The lineage or *Parampara* is carefully preserved in the families from the earliest times. A person who pays his respects to his elder announces himself in these terms. "I invoke your blessings, venerable sir, I am the descendant of *Saamkhyayana* of the *Gotra* of *Saamkhyayana*, follower of the *Aapastambha Sootra* of the name of Lakshmipathi Sarma". This is how the identification of any person is made in Hindustan. The necessity to specify the ancestry of the sacrificer in the sacrifices was an established idea from before the time of the *Rig-Veda*. (See Cultural Heritage of India Vol. I. for further information about *Rishis* and castes).

Paanini.

(750 B. C.)

Ashtadhaayi-a gramatical work of *Paanini* belonged to

the *Sootra* period i. e. about 750 B. C. *Sanskrit* was the spoken language of the people in those days. The cities of Naasik and Kanchi, South of the Vindhya Hills were mentioned in his work (5. 1 3.4.22). We learn not only grammar but also about the condition of the society and the habits of the people and many other important details regarding the state of Hindustan. from Paanini's work, and so this work serves as a land-mark in the History of Hindustan. The *Sootra* works in medicine and in philosophy may have been compiled about this period. The *Sootra* period therefore one, in which the Indian talent exhibited itself at its highest. The *Sootras* on sexual science (*Kama Sootras*) by *Vaatsyayana* and the *Sootras* in Prosody by *Pingala* are also ascribed to this period. They studied the existing sciences so exhaustively that they left notes and indexes on them, counting the number of words and even the letters contained in each treatise. For instance, *Rig Veda* is stated to contain 1017 *Sootras*. 1058 *Richas*, 15 36 28 word and 4,32,000 letters. These show the interest that our ancients took in the acquisition of knowledge and in the preservation of the same for the use of the future generations. How are we to clear our debt to them except by the propagation of that knowledge for the benefit of the humanity?

(2) The Smritis.

The *Smritis* embody the *Hindu Dharma*. They are based on the *Vedas* and the *Sootras* that followed the *Vedas*. The basic *Smritis* are 18. 1. Swaayambhuva Manu Smriti, (Manu), 2. Bruhaspati Smriti. 3. Vasishtha Smriti 4. Kaasyapa Smriti. 5. Bhaaraadwaja Smriti, 6. Gautama Smriti, 7. Yajnavalkya Smriti. 8, Bhrigu Smriti. 9, Naarada Smriti, 10. Kapila Smriti, 11. Paraasara Smriti, 12. Vyaasa Smriti 13. Kaatyayana Smriti, 14. Apastambha Smriti, 15. Aaswa

Ilaayana Smriti, 16. Kanva Smriti, 17. Atri Smriti, 18. Haarita Smriti. There are a number of auxillary *Smritis* bearing on the Manu Smriti. There are also a number of independent works like Hemadri, Nirnaya Sindhu, Dharma Pravritti Smriti Rahu Mahodadhi, Smriti Chandrika. Samskara Chandrika which are of later origin. There are many commentaries explaining the meaning of the *Smritis*, the chief being Kullookabhatteeyam on Manu Smriti and Saraswatee Vilaasam, Vijnaneswareeyam on Yajnyavalkya Smriti. Some have included Raamaayana and Mahaabhaarata also in the *Smritis*.

The *Smritis* govern all the diverse population classified as a Hindu. They are in the main of *Aryan* origin and some have pre-Indian roots. They take into account the peculiar conditions arising out of the amalgamation of different classes of people, diverse in origin and out-look and record the evolution of the composite religion of the Indo Aryan settlers in Hindustan. It may be said that the modern parallels of South Africa and the United State have been much less successful in solving the conflict of races.

Hinduism is not a religion in the sense, in which we understand Christianity or Mohammedanism, which take their origin after the teachings of certain originators or inspirers. By way of contrast, it was inevitable that a word should be found in order to describe the way of life and the religion of a form of the ancient people of Hindustan. The name Hinduism has been therefore adopted and it should be retained as meaning all that which is understood by *Hindu Dharma* or Hindu way of life.

Sanaatana Dharma.

The *Hindu Dharma* is called *Sanaatana Dharma*. The word Sanaatana means eternal. Although the laws regulating the life of the Society may change from time to time,

according to the needs of expanding society, the essential content of *Dharma* is in all its parts eternally the same. Just as a person may grow and shed particles of his body, and yet may retain un-changed his individual identity, so does this body of *Hindu Dharma* retain its unity and individuality. Hinduism is like a statue cut out of a single rock, although it incorporates into it diverse races speaking diverse languages, united in common brother-hood having lived for thousands of years in a common motherland. Its *Sanaatana* (eternal) character is not destroyed, but is maintained by its adaptability and adaptation. Most of the religious institutions of today are founded on ideas which were alive and active in the *Vedic* times.

Culture of the Smritis.

These *Smritis* are not mere law books. There is involved in the *Smritis* much more than the civil and criminal laws and the rules of inheritance and the laws of marriage and family. Every detail of the daily life of the individual is included. Social arrangements with all the social institutions are comprehended. The King's duties in relation to the internal and external affairs of the country are included therein. It is difficult to conceive of anything bearing on the conduct of any individual or of society as a whole that does not fall within the regulation attempted by the *Smritis*. Worship of gods, ceremonies in commemoration of the dead, birth and death pollutions, expiatory acts, sacrifices, customs and manners of daily life and behaviour are all included, indicating thereby their all-embracing character.

Evolution Theory

There is a very precise philosophy, individual and social, behind the scheme of the *Smritis*. That philosophy is at least as old as the *Upanishads*. The Universe is one vast

pulsating life. The manifestation of that life is not all alike or in one grade. It sleeps in the metal. It is awake in plants. It moves and knows, in the animals. It knows, and knows that it knows, in man. Increasing complexity of biological organization runs through physical evolution. It culminates in man.

Man is but the result of his past and present actions in all the three spheres of his existence, physical, mental and spiritual. And each new life starts at the point, where the previous life ended, with the accumulated heritage of aptitudes and capacities. This process of the continuous ascent of man is pursued through the ages and in countless lives.

Social Organisation.

Social organization had advanced to a feudal stage by the time of the *Rig-Veda*. The Aaryan community had divided itself into clans or Gotras, each comprising several families with different family names. The functions of the *Brahmin*, the *Kshatriya*, the *Vaisya* and the *Soodra* are essential parts of a social organism. Having regard to the nature of these functions, they are likened to the mouth, the arms, the thighs and the legs of the cosmic *Purusha* respectively. By the perfect co-ordination of these functions does a society live as an efficient unit. Any of these functions failing, society must be thrown out of gear and its unity must be destroyed.

Men are in different stages of evolution. They are of different types, and are fit only for performing different duties. The *Brahman* learns and teaches : he ministers to the spiritual needs of the people as priest, preceptor and preacher : he advises the sovereign, expounds and administers laws, and helps in framing and carrying out legislative policy. He is the custodian of intellectual and spiritual heritage of the

race. The *Kshatriya* governs and performs the executive functions of the State, protects and preserves order against external aggression and internal forces making for disorder, and is the custodian of social power. The *Vaisya* includes the agriculturist, the merchant, manufacturer and trader and all those who provide the sustenance of the race, and is the custodian of its economic functions. The *Soodra* is that portion of the population which, being incapable of independent initiative on an adequate scale, merely assists in the discharge of essential functions by the contribution of manual labour. With opportunity for unimpeded growth, a man reaches to the full height of his stature.

The germ plasm travels from the ancestor to the descendant. There is this physical continuity of the race. The man is born again in his wife as the son. It is himself that is named the son. The intellectual and cultural heritage and traditions of the race have to be handed on from one generation to another. Such augmentations as each generation is able to make, are secured by the recognition of the intellectual guardians of the race and by careful selection and preservation of the purity of the seed.

The advantage of a division of types and the assignment of different functions according to type is that it leads to the abolition of conflict and the production of increasing efficiency through the specialized function for which individuals are prepared by the concentration of their individual aspiration, their every sense of perception and sense of action that is by the combination of eye and arm. Conflict is also abolished, as between different generations of people, by the retirement of each generation in due time when the next generation is ready to take the place of the outgoing. The above *Varnaasrama Dharma* constituted the

general theory of life for society and for the individual in Hindustan.

In every organism, there must be a co-ordination of energy, a sifting of the better, and the success of any social group depends upon the power of the leaders to distinguish the superior from the inferior, to exercise a check upon the uncritical appetites of the group, a capacity which can only be gained by practising it on oneself with the consequent development of knowledge, experience, and character. In the absence of such leaders there will be but the chaos of contradictory impulses of the brutal domination of the stronger,

Varnaasrama Dharma.

The Indo-Aryans of those days set upon themselves two duties namely:—

(1) That of elevating the lowest classes, some of whom were different also in the colour of the skin by imparting to them special knowledge according to the capacity of each class and their utility to society. This is all classified as *Varna Dharma*.

(2) That of elevating the infant who is born without any knowledge of the world or of himself, stage by stage and finally of making him realize his own self. (*Aatma Vidyaa*.) This is called *Aasrama Dharma*.

It has been said that caste is a unique and a puzzling institution of Hindustaan, not to be found any where else in the world. The uniqueness of caste is undeniable, but it is rooted in intelligible psychology and was almost inevitable in the circumstances in which it arose. It started in ideas which are world-wide and have their counterparts in the modern world.

Matsya Nyaaya.

(The Logic of the Fish)

'Should there be no ruler to wield punishment on earth,

the strong would devour the weak, like fishes in water"—(Mahaabharata -Santi-47-16-17) "If the king is not vigilant to those that should be punished, the strong would devour the weak like fishes." (Manu 7-20). The idea of the fish-like struggle for existence or self-assertion was then a generally accepted notion, in the literature of Hindustan. Both *Artha Saastra* 4th Century B. C. by *Kautilya* and *Neetisaara* by Kamandhaka 500 A. D. assert that in the absence of punishment (Danda) the distruction or ruinous logic of the fish operates through mutual animosities of the people, and leads to the desruption of the world.

In order to escape from the logic of the fish, i. e. in order to prevent the weaker members of the community from being preyed upon by the stronger, the idea of the state (*Varnaasrama Dharma*) was introduced in the condition of nor-state.

Hypergameous Marriages.

The rules about the raising of the status of the issue of mixed castes by successive hypergameous (*Anuloma Vivaaha*) unions are to be found both in *Manu* and *Yajnavalkya*. *Usanas* goes so far as to put in different groups, those born by marriage in irregular order and also in illicit unions. If successive marriage should raise the child to a higher status in five, six or seven generations, the caste of the parent has to be remembered or recorded and the result accordingly, decided and maintained. This must be very difficult. Slowly the position of the father as the determining factor fell into the background, though I hear that it is still current in the Punjab and the mother's status, generally became the sole determining factor.

The ancient discussion about the dominance of the seed or the field came to be definitely settled in favour of the field, when we come to *Manu*.

* *Aayurveda in the Smritis.*

By the time the Smritis were compiled, the principles of *Aayurveda* were widely known and were incorporated in all departments of the State. The rules of conduct codified in the *Smritis* and enunciated in the *Samhitas* of *Charaka* and *Susruta* correspond so much that we feel that both derived their knowledge from a common source. Whereas the *Aayurveda Sootras* were more or less exclusively intended for the educated classes, the *Smritis* were intended for popularising this knowledge among the masses. Penalties were levied upon those who disobeyed the rules of conduct laid in the *Smritis*. (Vide P. 50.) There is respectful mention of *Dhanwantari* in Manusmriti. (III—85). We give below a few examples of hygienic rules from Manusmriti for the sake of comparison.

The beauty and the emphasis of the pithy sayings cannot be brought out in English translation. We shall however translate them as best as we can.

1. "Na snaanamaacharet bhuktya". (A. 4-159) Do not bathe after eating.
2. "Braahme muhoorte buddheta dharmarthancha-anuchintayet" (4-92) One should get up from bed in Brahma Muhoorta and think about Dharma and Artha.
3. "Na bhuktamaatre adheeta" (4-121). One should not study immediately after meals. (Yaavadaardra hastam)
4. "Satyam brooyaat, priyam brooyaat, Na brooyaat Satyamapriyam. Priyamcha naanritam brooyaat esha dharmah Sanaatanah"—4-138)
Tell the truth, tell what is pleasant. Do not tell falsehood even if it is pleasant. This is the eternal rule.
5. "Adbhirgaatraani sudhyanti, Manah satyena sudhyati, Vidyataapobhyaam Bhootaatmaa, Budhirjnaanena sudhyati." Ch. V, 109.

The body is purified by water, and the mind is purified

by truth. The Jivaatmaa (the soul) is purified by knowledge and Tapas. The Buddhi is purified by correct knowledge.

6. "*Naaprishtah* Kasyachid brooyaat. Na chaanyayena prichhatah". (2-100) (Cf. Gita Ch. 4. 34.) Compare Bhagavatgeeta "Tad viddhi pranipatena pari prasnena sevaya.

Never teach anybody any thing without being questioned. Never answer any unreasonable questions.

7. Na jaatu kaamah kaamaanaam upabhogyena saamyati, Havishaa krishna vartmyeva bhooya evabhivardhate (2-94)

If you pour ghee over fire, the fire will never be quenched, but it will blaze more.

Similiary you can never satisfy the Indriyas by fulfilling their desires. (The best way to conquer them is to control them).

8. "Indriyaanaam tu sarveshaan yadyekam chharatindriyam tena-asyachharatah pragnaah driteh paadaadi vodakam". (2-99)

Even if one Indriya is addicted to vicious habits, it is enough to ruin even a wise man, just like a water bag with a small hole will not be capable of containing water.

9. "Naapsu mootra-purishamva sthivanamva samutsrijet (Ch. IV-56)

One should not pass urine, stools and spit into water.

10. "Dooshayechaasya satatam yavasaannodakendhanam." enemys poison the food of animals and men, water and fuel in the enemy's country, so that they may not be useful to them. "Panthaanamudakam chhaayaam bhaktam yava samindhanam, dooshayantyarayah" (Cf. *Susruta Soot* 1-4)

3. The Epics.

The Epics were very much older than the *Puraanas*. The chief epics of Hindusthan are the *Raamaayana* and the *Mahaabhaarata*. They are next in time and also in importance to the *Vedas*. Though the exact text of the Vedic lore are denied to the *Soodra* but nothing of the substance was denied to him. His growth in every department was unimpeded. The *Raamaayana*, the *Mahaabhaarata*, the *Bhagavadgeeta*, the *Puraanas* and all other valuable books are open to the study of all. Even the unchanted *Yeda*, which is verbally the same, may be listened to and understood by the uninitiated classes. The position of well instructed *Non-Aryans* was always of high influence and they were also approached for the solution of problems relating to the conflict of *Dharma*. The spiritual equality of all *Bhaktas*, irrespective of their caste was always recognised.

Culture of the Raamaayana.

The descendants of *Ikshvaaku* were all without exception noted for their devotion to piety and aid to the welfare of the subjects. The country attained a high level of prosperity during the long reign of *Dasaratha* in particular. The people had plentiful supply of all essential requirements of life, of horses and cattle and corn and wealth. (Bala VI. 7).

Under his efficient administration, the various orders of society discharged their proper responsibilities: and the high virtues practised by the king and his principal officers led smoothly and inevitably to the raising of the cultural level of the subjects. What better tribute can be paid to any ruler and his ministers than what *Vaalmiki* for example repeats in the case of *Dasaratha*, namely, that there was none during his reign, who was atheistic or untruthful or slenderly read or illiterate? (Ibid. VI-8. 14-15).

The capital itself was in every way a source of attraction. Its roads were spacious, well laid out and regularly watered to keep down the dust. Everything was clean, the food eaten was pure, and the water available was "sweet as the juice of the sugarcane. Agriculture and trades received special attention and protection. From various countries, merchants naturally flocked to take advantage of the conveniences offered, and the streets looked beautiful with well arranged rows of shops.

Military Equipments.

There was a thoroughly trained and equipped army. It was stationed in the various forts which were carefully provided with enough wealth, corn, water, arms, machines and artisans. The capital itself was the abode of mighty warriors of straightforward ways, of great learning and culture. There were great car-warriors by thousands, whose arrows sped with irresistible force, but who would never degrade themselves by striking a fugitive or in any other manner violating the rules of chivalry. (Bala VI—21: V-20-22). Faithful and loyal because of their own sense of duty and honour, they were doubly attached to their king and country owing to the kind and dignified treatment given to them. "Do thou so act, my brother", says *Rama* to *Satrugṇa* before the latter's march against *Lavana*, "that the soldiers might be well fed and delighted and never annoyed with thee. Do thou please them with sweet words. For the soldiers, when they advance against their foes, have not with them their friends or wives to cheer them up. Sufficient food and presents are thus the only things which can afford them comfort and pleasure". To *Bharata* also he speaks in a similar strain "Dost thou not", he asks, "at the proper time grant the soldiers what

thou shoudst, namely, provision and pay?" And he wisely adds the warning, "Remember that if the proper time for these be passed, the servants get angry with their master and tax him; and great is the evil that springs therefrom". (Ayodhya. C. 32-33).

Democratic Institutions

The East is often described as having known and relished only despotic monarchy. The *Raamaayana*, however, presents an entirely different picture. For, at every turn we find the ministers, learned men and the principal officers of the army consulting together and shaping the policy of the State. On important occasions people from different parts of the land assembled and took part in the discussions. Free expression of opinion was allowed; and mutual consultation and independent thinking were expected to take place before any one spoke out his views. In the matter of *Raama's* installation as king, for example, there was an exceptionally large gathering. Then in a mighty voice, solemn and resonant, *Dasaratha* announced his intention of retiring from the heavy duties of administration and giving his aged frame its much-needed rest. "If what I have proposed is proper" said he, by way of conclusion, "and is to your liking, do you accord approval to it, and advise me as to what else I am to do and in what manner. But if I have thought thus solely owing to a desire for personal satisfaction, do you find out some other means for my welfare." He then invited free discussion, that being acknowledged on all hands to be the surest method of obtaining dispassionate decisions. Even when the leaders, the citizens and the inhabitants of the provinces took counsel together and gave their unanimous support the king wanted to make them think a second time and

spoke as if he had not known their minds. "You have wished for *Raama*," said he, "as soon as you have heard my speech. This raises doubts in my mind. Do you, therefore, speak out your minds truly. Why, while I am righteously ruling the land, do you wish to see my son installed?"

This principle of ascertaining the opinion and seeking the advice of the people on all important occasions was observed invariably by every ancient king. As an extreme example of it the *Mahaabhaarata* describes the aged and blind *Dhritaraastra* discussing with his subjects and persuading them to permit him to retire to the woods. "This *Gaandhaari* also", he pleads, "is old and cheerless. She, too, has lost her children and is helpless. Afflicted with grief for the loss of her sons, she solicits you with me, Knowing all this, grant us the permission we seek. Blessed be you, we seek your protection". (*Mahabhaaratha* IX. 8. 9). Even such an obstinate and wilful ruler as *Raavana* is shown as allowing free discussion in his assembly; and we find not only *Vibhishana* but also *Kumbhakarna* vehemently criticizing from different standpoints his conduct towards *Sitaa*. Although *Kumbhakarna* is determined to stand by his brother to the last, he does not hesitate to address him in public in his characteristically blunt and fearless manner, "All this that thou hast done" says he to *Raavana* "is not worthy of thee. If thou hadst at the outset consulted us in the matter, we would have done what was proper and dissuaded thee. By luck it is, that *Raama* hath not yet slain thee, who hast done this tremendous thing without serious reflection." *Raavana*'s maternal grandsire *Maalyavaan*, also speaks frankly in the assembly and rebukes him for his defiance of duty, his addiction to carnal pleasures and his unrighteous ways in general. (*Ibid.* XXXV. 15—17.)

Scope and Importance of Education.

Constitutional methods and military efficiency, however, were not the sole factors connected with the welfare of the people. Rather, one might put it the other way about the king and his ministers remained constitutional and the soldiers and other sections of the subjects discharged their functions conscientiously and without mutual encroachment, as a result of the high standard of education common in those days. Government methods and cultural level reacted on each other and became so interdependent that it was difficult to say, which was the cause and which the result. Education got so organized that each section of the society knew not merely the details of fulfilling its own special function but also the relative place of its contribution in the general scheme. It was also a part of the training to create the mental attitude needed to keep competition within specified and healthy limits. The work of the ruler and the leaders was thus to see that the proper kind of education was given to the different sections of the society, and also to help all individually and collectively to blossom forth and spread their fragrance from within their own particular spheres. To the *Brahmana*, the king's question, for example, always ran: 'Do your disciples regularly wait upon you during their period of study?'. To the *Kshatriya* it was modified into; "Do your disciples always remain mailed?". And so on to each of the other section with the necessary variation. (Ayodhya. II. 38-40) The king's training had to be all-comprehensive; for he was the chief executive officer and had to know the art of bringing out the best from the varied temperaments that constituted his country's real wealth. He had to be a patron in every department of its activities and to arrange

festivities and demonstrations calculated to stimulate the power of originality and invention.

Many Sided Nature of Sacrifices (Yajnas.)

Every sacrifice was an occasion for making all sections of society meet together, dedicate their skill to the success of the function and receive adequate presents. It was more or less a "World's Fair" or a "Parliament of Religions" of ancient days. There were some sacrifices in which a powerful king through friendship or conquest collected tribute from brother rulers, who had hoarded wealth, brought it to a central place of his own choice and distributed it to experts in every department of activity according to his standard of justice and merit. *Raama* performed such a sacrifice: and as the *Uttara-Raamacharitra* puts it, it was the fight over the sanctified horse that created the opportunity for *Raama* to recognize his sons *Lava* and *Kusa* and take them to the palace. The best type of sacrifice was, of course, considered to be that in which the sacrificer spent not only all that he managed to collect by the methods sanctioned in the *Saastras* but also the original wealth he had been enjoying. On the day after the ceremonies, then, he would be obliged to start life afresh and struggle hard for his bare subsistence. The poverty which became the lot of a paramount emperor as a result of performing the *Visvajit* sacrifice, which involved such renunciation, (Bala XIV. 42) was regarded as highly auspicious. *Raghu* was in such a state, with only earthen pots wherewith to serve his guests, when Kausta, disciple of *Varanannu*, approached him for the wealth to be given to his teacher. Heroic soul that he was, the monarch did not hesitate to give the assurance needed. How could he give room for the unprecedented scandal that a master of the *Vedas* came to *Raghu's* door to get some wealth for his

preceptor, but was disappointed and had to go to another donor? The crisis was got over through the help of the gods and the people of *Saaketa* assembled to witness the remarkable scene of *Kautsa* refusing to accept anything more than what was due to his teacher and *Raghu* insisting that he should. (Reghuvamsa. V. 24., 31).

Re-distribution of Riches.

Without *dakshinaa* and presents no sacrifice was thought complete; and if wealth, power, long life, progeny and even heaven were the results, the performer had in view for himself, food, kind treatment, honour, rewards for merit, chances to compete in the display of skill and a redistribution of riches and political power were none the less benefits which sacrifices conferred upon society as a whole. In the sacrifice for" instance, which *Dasaratha* performed for being blest with children, *Vasishtha* took particular care to summon not merely the priests well versed in the ceremonials but also "experienced carmakers, highly pious and aged people, servants to assist in the various functions, artists, carpenters, diggers, astrologers, artisans, dancers, conductors of theatres as well as pure and learned persons, proficient in the numerous branches of study". "Provide comfortable and spacious buildings", his mandate ran, "for the *Brahmana*, the citizens and the dwellers in the provinces. Let there also be separate quarters for the princes coming from foreign parts, and stables for the horses and dressing rooms and wide apartments for native and foreign soldiers." All these were to be specially stocked with the best viands and the distribution was to be made with proper respect and not with the indifference natural on festive occasions. No one was to be disregarded out of anger, but each visitor, irrespective of rank was to be highly honoured and entertained. (Bala

XIII. 6-17). These instructions were carried out to the letter, and we are told that while the deities were being given their share of sanctified offerings, human beings were equally receiving the best that the culinary art could supply. "*Brahmanas* and *Soodras* having among them aśetics and sramanas, and the aged and infirm, women and children were continuously fed by persons adorned with ornaments and wearing pendants". The intervals between the ceremonies were utilized in beneficial ways. Mild and eloquent scholars would for example, engage in divers arguments desirous of getting victory over one another. (Bala XIV. 12-19). It was while *Raama* himself was celebrating a similar grand sacrifice that he chanced to see *Kusa* and *Lava* singing in the streets and thought of securing their services for providing good music for all and an intellectual feast for those who could appreciate poetry. Being himself proficient in music. (*Ayodhya*. II. 35) he was very particular to invite all the musical experts attending the sacrifice. Persons well versed in literature and history and the various branches of the *sastras* were also specially summoned to attend the performance. All were soon struck with the sweetness of the music, the grandeur of the theme and the graceful appearance of the singers, and expressed their desire to hear them again. Accustomed to reward greatness wherever met with, and especially at a sacrifice, where eminent men from all provinces gathered, *Raama* forthwith ordered *Lakshmana* to give them eighteen thousand gold coins and numerous other valuable presents.

Raama's life was one of crosses. Situations of such a baffling nature always arose that anybody less heroic or less self-sacrificing would have either fled from them or left them further complicated. But *Raama* faced them all

and put forth his best efforts to bring them under control.

There was no situation from which he shrank which he did not endeavour to solve or at least smooth through the application of his prowess, his regard for truth and justice and his readiness to sacrifice his interests to achieve the welfare of others. If *Vaalmiki* has not stressed the fact of *Raama's* being an incarnation of *Vishnu*, he has certainly brought out vividly that he was an embodiment of *Dharma* in its manifold aspects.

Conclusion.

Many a poet of later years has drawn inspiration from the glorious history of *Raama* and has either translated this ancient work into the vernaculars or produced original composition giving elaborate treatment to particular episodes. Painters and sculptors have also been drawing their best materials from this sacred theme and in different parts of the country one may see the mighty temples erected in honour of *Raama*, containing his image in a heroic pose within the shrine or his story depicted in colours all over the walls. In the afternoons or at nights, when work is over and leisure is available, here and there, may also be seen groups of devotees, including women and children, listening eagerly to the exposition of the *Raamaayana* and imbibing the principles of *Dharma* as the ancients conceived of it. The story-tellers are specially trained in the art, though there may not be much in common between their modern performances and those given by the original chanters, *Lava* and *Kusa* the disciples of *Vaalmiki*. In all these ways and many more, the ideals presented by the sage have spread to every corner of the country; and even if many may not accept *Raama* as a deity to be worshipped or regard him as their chosen spiritual ideal,

there is no doubt that his character as a hero and as a man of virtuous action and that of *Sitaa* as a model heroine have been instrumental in shaping the lives of many, who genuinely aspire after *Dharma*.

Religion is now passing through a crisis. On the one hand we see the different creeds meeting together and trying to swell the ranks of their respective followers through diverse methods of propaganda and conversion. On the other hand, we see a hundred forces threatening to remove not merely any one creed, but religion itself, from all schemes of human activity on the ground, that it has made men weak and inefficient, created splits instead of unity and failed miserably in combating the evils of a world distracted by political rivalries and economic depression. But even to such a world, *Vaalmiki* may have a welcome lesson to teach if it were so minded as to learn. For, he has carefully refrained from laying emphasis on what we now wrongly understand by the term religion, namely, rituals and external conformity to set prayers and churches and their rules. These, he knew, have necessarily to differ from the differences in the temperaments and attainments of the individuals who have to evolve. Instead, he has wisely upheld the ideal of *Dharma*, which has a comprehensive sweep and which enables its votaries, irrespective of their vocation or status in society to enjoy inner perfection and freedom while dedicating their virtues to the welfare of others. If this ideal, as the sage, has exemplified in the motives of his numerous characters, is grasped and put into practice, all the creeds may survive the present crisis, work side by side without feelings of hostility and make people intelligent, efficient and self-sacrificing enough for solving the problems of the family, country or even of the world as a whole.

Mahaabhaarata.

Mahaabhaarata is the biggest of world's epics. It contains 1,00,000 *slokas* or verses, that is about 8 times the size of the Iliad and Odyssey put together. From the beginning it has enjoyed exceptional popularity. Heroes of the great poem find prominent mention in the works of grammarians, theologians, political thinkers, poets and dramatists almost uninterruptedly from about the fifth century B. C. Precepts culled from the epic are quoted by a Greek envoy as early as the second century B. C. while the prowess of its principal heroes is mentioned already with admiration by royal personages in the Deccan in the second century A. C. The whole poem is known to have been recited in temples in far off Cambodia as early as the sixth century A. C. In the next century, we find the Turks of Mangolia reading in their own idiom, thrilling episodes like the *Hidimbhaa-Vadha*. The work was translated into their own vernacular by the people of Java before the end of the tenth century.

"The Story of the great work by Mrs. Anie Besant narrates the main incidents of the *Mahabharata* in English in a telling style.

The date of Yudhistira's Reign.

"Aasan maghaasu Munayah Saasati
prithveem Yudhishtire Nripatau,
Shaddvik Panchadviyutah
Saka Kaulastasya Raajnah."

The time of Yudhistira's reign was compiled as 4390 years before this year 1943.

The great Astronomer Baraahamihir records in his book entitled *Brihat Samhitaa*:—

During the reign of king Yudhishtira the *Saptarshi* Constellation was in the "*Maghaa Nakshatra*". It has been ascertained from calculation based on this Saptarsi Vichar-gananaa that the Saka era was introduced 2526 years after the date of his reign. So, Yudhistira flourished at least 4390 years ago, The Saka era begins at 79 A., D. Therefore 1943-79-1864+2526 gives 4390 before our time.

Bhaarata and Mahaabharata.

At some stage in its development, the epic contained 24,000 verses, but gradually by absorption of numerous upaakhyaanas or secondary tales and a considerable mass of floating literature, it attained to its present bulk of 100,000 verses or prose equivalents. This process was practically completed in the fifth century A. C.

Before the epic was complete, the Aaryan civilization had spread over the whole of the vast sub-continent, named after the illustrious *Bharata* and stretching from *Badaree*, hallowed by the hermitage of *Nara-Naaraayana* (III. 156) in the North., to *Kumaaree* in the land of the *Paandyas* in the extreme South (III. 88. 14) and from *Dvaaraavatee* nestling under the shelter of Mount *Ujjayanta* in the West (III. 88. 24) to *Pragiyotish* and *Kaamaakhya* beyond the *Lauhitya* or *Brahmaputra* in the East (III. 82. 105; 85. 2) The centre of political gravity was in the western part of the *Madhya-desa* or the Upper Ganges Valley, though *Magadha* (South Bihar) was clearly laying the foundation of its future greatness. But the name of *Paataliputra* was not yet heard of and the sturdy warriors of South Bihar were still content with their old hill fortress of *Girivraja*.

Democratic and Republican Institutions.

The great king of the epic was usually a monarch

who could boast of an illustrious pedigree and a claim to rule by hereditary right (III. 78. 9). But elective monarchies were not unknown, and in *Puruvamsaanukeertana* section of the *Aadi Parva*, we have a reference to a ruler whom "all the people elected to the kingship, saying that he was a virtuous man".

In several passages mention is also made of kingless people, of corporations (*Ganas*) that the autonomous and of warrior clans having a titular *Raja* but actually governed by elders styled *Sangha mukhyas*.

The head of the State in the epic was no autocrat. He carried on the affairs of his realm with the assistance of a *Sabha*, which was either an assembly of all the warriors of the clan (I. 220) or a council of elders consisting of the members of the royal family, generals, subordinate allies and other military chiefs (V. 47. 10). The circle of advisers and councillors was sometimes enlarged by the admission of priests rejoice" (XIII. 46 5 9). "Three things do not become impure—women, gems and water" (XII. 163–32). "women should not be slain" (XII. 135–14).

The noble sentiments about women are reflected in the tales of *Saavitri*, *Sakuntalaa*, *Tapati*, *Damayanti* and *Sitaa* than whom "no more tender and delicate types of women are to be found". Epic heroines received a liberal education in their fathers houses and developed into well-taught and clever disputants. Thus a princess tells her husband in the *Vana Parva* (ch. 32.60 ff) how, in days long gone by, her father and her brothers received lessons on the *Neeti* of *Brihaspati* from an erudite *Brahmana* and she herself listened to all those learned discourses while seated on her father's lap. In the *Udyoga Parva* (133.3) a *Kshatriya* matron is described as being widely known for her knowledge and learning.

In several epic stories we find maids choosing their own husbands and in a famous episode of the *Vana Parva* a king asks his daughter to choose a husband and says that he will give her to the man of her choice. (III, 292.32 ff).

Privacy of women was practised in certain families, but many of the epic tales bear witness to a freer life when women laid aside their veils and came out of the seclusion of their houses. This was specially the case at the time of *Svayamvara* or on the occasion of a great national festival or sorrow. The characteristic traits of the women of the period and the place they occupied in society are clearly brought out in several *Upaakyaanas*. In the story of *Saavitri* we have the ideal wife wrestling with Yama, the God of Death for the life of her husband. The episode of *Vidulaa* bears testimony to the fierce unbounding spirit of the true daughter of an aristocratic house, who exhorts her indolent son to "flare up like a torch of ebony wood, though it be but for a moment, but not to smoulder, like a fire of chaff, just to prolong life". (V. 133. 14).

The place of the wife in domestic economy is best described in the following lines of the *Saakuntalo-paakhyaana*.

"A wife is half the man, transcends,
In value far all other friends.
She every earthly blessing brings.
And even redemption from her springs".
"In lonely homes, companions bright,
These charming women give delight;
Like fathers wise, in duty tried,
To virtuous acts they prompt and guide.
Whene'er we suffer pain and grief,
Like mothers kind they bring relief".

Religion in Mahaabhaarata.

The old *Vedic* Gods lost most of their pristine splendour and the presiding deities of nature became quite human in dress, talk and action. New deities like *Skanda* take their place.

The law of Karma.

The whole world is conceived as a perpetual process of creation and destruction filling eternity with an everlasting rhythm and the entire scheme is placed under the law of *Karma*, which provides that every individual shall reap the fruit of deeds performed in previous lives. "As the calf could recognise its mother among thousand kine, so the deeds of the past, would not fail to find out the doer". (XII. 186. 7).

The operation of the law might, however, be modified by the grace (*prasaada*) of the Lord, the Ordainer (*Isvara*) combined with the loving faith (*Bhakti*) of the worshipper.

Bhakti.

The doctrine of *Bhakti* is preached, among others, by the *Bhaagavatas* or *Paancharaatras*. They teach *bhakti* for *Krishna*, who is identified with *Vishnu* and *Naaraayana*, and their religious and philosophical views are expounded in the *Bhagavad Geeta*, the *Naaraayana*, the *Visvopaakhyaana* and several other theistic treatises incorporated into the great epic. Rival sects also make their appearance, the most notable being the *Pasupatas* and *Suras* who lay stress on devotion to *Siva* (*Pasupati*) and *Surya* (also called *Mihira* respectively). The growth of these sects threatened to destroy the solidarity of the *Aryan* community. Separatist tendencies of extreme sectarianism are, however, sought to

be checked by the doctrine that *Vishnu* the God of the *Bhaagavatas*, is identical with Siva, the deity of the *Bhaagavatas*. (III. 39. 76. 47).

This dualism prepares the ground for the doctrine of the *Trimurti* which seeks to unite the gods of the most important theistic sects and of the orthodox theologians into a Trinity and teaches that the Father of the universe, though one, has three aspects. In the form of *Brahma* he creates, in the form of *Purusha* (*Vishnu*) he preserves and in the form of *Rudra* (*Siva*) he lulls the universe to eternal sleep (III. 271. 47).

Self restraint, renunciation and vigilance, these are the three horse of *Brahma*. "He who rides on the car of his soul, having yoked (these horses) with the help of reins of right behaviour, goes, O King to the realm of Brahman, shaking off all fear of death. He who assures to all beings freedom from fear goes to the highest of regions, the blessed abode of *Vishnu*. The fruit that a man reaps by granting protection from harm cannot be obtained by thousands of sacrifices or daily fasts". (XI. 7. 23. ff). These sentiments are echoed by a Greek devotee of *Vasudeva-Krishna*, in an epigraphic record of the second century B. C. The new school of saints and seers to whom we owe these and similar ideas, lays stress on *Aatma-yajna* (sacrifice of self) in place of the older *Pasu-yajna* (sacrifice of animals).

Sri Krishna and Arjuna

Sri Krishna the human-cum-divine actor on the Mahabhaarata stage, is the pivot on which the whole epic revolves. The intervention of the divine in human affairs is an integral part of Hindu philosophy and religion. Only the elect know whether *Sri Krishna* is only human or divine as well. What

ever *Bhishma* may say to prove the divinity of *Sri Krishna*, Duryodhana and Jayadratha can never perceive a spark of divinity in him. Whatever may be the reverses sustained, Yudhishtira and Arujana can never doubt the greatness and divinity in *Sri Krishna*. Thus does the inexplicable law of the universe confound the intellect of the proud and chasten the mind of the devoted. Right can never be defeated of its end even as wrong will never go unpunished. To test our constancy in the Lord, right suffers apparently more reverses, but there can be no doubt of the final victory of right over wrong. It is to teach these age long truths that the happy and perfect combination of Arjuna with *Sri Krishna*, the ideal Pupil and the perfect Master, has been worked out by the author of the *Mahaabhaarata*. The moral teachings preached in the *Bhagavad-Geeta* are true for all time and for all castes. Whatever may be one's duty, so long as it is performed without malice and without an eye to selfish gain, it will stand by the doer for his lasting good. Exertion is always superior to destiny, for destiny is the result of previous exertion. In action, born of the unreasonable belief that destiny is all powerful, it is condemned unequivocally. The *Karma* that we reap now is the result of our past exertion, and present exertion can modify this *Karma*. We are not straws in the current of *Karma* but men, nay, gods in the making. (Saanti-parva) (ch. 56),

Golden Age.

The *Mahaabhaarata* age was the golden age in the history of Hindu civilization. The caste system had not yet bound itself with unbreakable fetters. It stood more for one's vocation in life, suited to one's temperament and environment. The Braahmanas were not only philosophers and preceptors but were warriors as well; and the Kshatriyas

were not only warriors but great philosophers endowed with highest spiritual insight. The welfare of their subjects was the constant care of kings whether they were on the throne temporarily, or permanantly in their own right or by right of possession. The subjects loved their king whether he was in prosperity or in exile. The land was over-flowing with riches and honey; and even at the end of unparalleled wars, no one heard of famines, much less of punitive taxes or military occupations. In that age, arts and services flourished as never before; prosperity and contentment were writ large on every face and every square inch of land.

From the point of view of philosophy, it was an age of consolidation rather than invention. The intellectual *Saamkhya* was developed hand in hand with the practical *Yoga*. *Sri Krishna* was the greatest *Yogin*. The *Darsanas* were in their embryo and had not yet developed as distinctive schools. All were *Meemaamsakas* in that they obeyed implicitly the injunctions of the *Vedas* in regard to their daily practices and the performance of sacrifices. But the philosophical development of the *Meemamsa* system was a matter of later development. *Nyaaya* flourished as a necessary equipment for all studies and speculations. The general principles of the *Vedaanta* as taught in the principal *Upanishads*, held the Absolute was called *Brahman*, *Vishnu* or *Siva*, the three not being mutually exclusive or contradictory. *Siva* and *Vishnu* are praised equally in one and the same *parva*, each with a thousand names. *Sri Krishna* is the highest Lord even as *Siva's Paasupataastra* is the mightiest weapon. The outlook is synthetical rather than the competing omnipotence of one or the other. It was an age of belief in God and faith in the scriptures, each one performing his allotted task not only for his own sake but for the sake of

the glory and uplift of his community and nation as a whole.

The epics, the Raamaayana and the Mahaabhaarata, continue even to-day to be the bed-rocks on which the Hindu ethics and moral ideas and ideals are based and practised. To a Hindu, his daily life, from morning till evening, is one that cannot be divorced from the observances of religious acts and duties. Religion and daily life are so inextricably interwoven with each other that herein lies the special feature of Hinduism that marks it out from the standards according to which each Hindu should fashion his own conduct in daily life. And it is because of this peculiar feature of Hinduism that it is well-nigh impossible to give any scientific definition of Hinduism in cut and dry formulas. However, Sir. P. S. Sivaswami Ayyar has, in his Kamala Lectures, brought out admirably the leading features of Hinduism in the following words :—

“The doctrine of *Karma* with the allied doctrine of Rebirth is one of the essential tenets of Hinduism. It is deeply rooted in the minds of all Hindus and has permeated Hindu philosophy, literature and art. This doctrine which teaches that every one must win his salvation by his own work is a much stronger incentive to the spirit of manly self-reliance and self-improvement than the doctrines of vicarious atonement or redemption. Hinduism dwells persistently upon the importance of self-discipline and self-control for the regulation and co-ordination of human impulses and instincts for the perfection of character.

Ahimsaa and the Spirit of Toleration.

In no occidental religion has the doctrine of *Ahimsaa* been proclaimed as one of universal scope or assigned such an important place in the ethical scheme. Hinduism has always been characterized by a spirit of toleration and has

hardly ever indulged in the persecution of the followers of other religions. It has never put forward its claim to a monopoly of truth. It is the glory of Hinduism that it never interfered with or discouraged freedom of thought, speculation or opinion, so long as they conformed to the rules of society in matters of external conduct. In dealing with the mutual relations to members of society, Hinduism has always laid stress upon obligations rather than rights. These are the ideals preached in the *Mahaabhaarata* and these continue to be the governing factors in the life of every true Hindu even to-day.

Aayurveda in the Epics.

There are many references to Aayurveda in the *Raamaayana*. The story of *Sushena Vaidya* and *Sanjivani* is well known.

There is mention of *Susruta*, son of *Visvaamitra* in the *Mahaabhaarata*. The terms *Aayurveda*, *Ashtaanga Chikitsaa* and *Krisnaatreya Chikitsaa*, were used to denote Medical and Surgical treatment. The specialisation of the subject into Medicine, Surgery and Toxicology was already made. Specialists in Medicine and Surgery were known to exist at the time of the *Mahaabhaarata*.

“Aayurveda Vidastasmaat tridhaatum maam prachakshate” (Saanti. Moksha-137).

“Kvachitte Kusalaa Vaidyaa Ashtaange cha Chikitsite” (Sabha, 35).

“Devarshi Charitam gaargyah Krishna-atreyaschikitsitam” (Saanti-Moksha. 137).

Age of Revolt.

For a long time after the *Mahaabhaarata* war (i. e.) before the commencement of *Kaliyuga* (over 5060 year before our time), Hindustan was divided into a large number of

States, chief among which may be mentioned *Kuru*, *Kaasi*, *Kosala* and *Videha*. During the next period, of which we possess more historical detail, namely the *Buddhistic* period, we have mention of sixteen States. The powerful republican State of *Lichhavis* had taken the place of the old kingdom of *Videha* and new kingdoms of *Magadha* with its capital *Paataliputra*, *Vatsa* with its capital *Kaushumbi* or Alahabad and *Avanti* with *Ujjaini* then came to the fore front. Among the small republican states may be mentioned that of *Saakyaas Kapilavastu* (Nepal Tarai). By following an aggressive imperial policy the small kingdom of *Magadha* developed into a mighty All India Empire. During this age, which may be called the age of revolt; new developments in the religious thoughts of the people became prominent. The characteristic features may be summed up as follows.—

Buddhism-Jainism.

1. Although they started with their *Upanishadic* teachings as their back-ground, they proceeded in different directions to build up different systems of religious beliefs. The God *Rudra* mentioned in the early *Rig veda* as a terrific God, became a beneficent God under the name of *Siva*. Thus a system was started as a *Saiva* system.

2. Instead of the impersonal absolute *Brahman*, the worship of a personal God with devotion (*Bhakti*) rather than through meditation and knowledge gave rise to the *Bhaagavata School*. *Hari* the God of Gods was worshipped as a personal God openly, denying the efficacy of sacrifices (*Yajnaas*) and austerities.

3. Broad practical view of every day life laying stress on morality and dis-counting the metaphysical discussion about God and Soul gave rise to *Buddhism*. *Gautama Buddha*

was born in the year 623 B. C. in the republic *Saakya* clan and lived for 80 years, when he preached the fundamental principles of *Buddhism*.

4. *Vardhmaan Mahaavira* usually regarded as a founder of *Jaina* religion, was born in a suburb of *Vaisali*, the capital of another famous republican clan of the *Lichchvis*. The traditional date of his birth was 599 B. C. He lived for 72 years and preached *Jainism*. The *Jains* claim that there were 23 prophets, (*Tirthankaras*) before *Mahaavir* and that their religion was an offshoot from the *Ahimsa* doctrine of the *Vedas*.

Aversion to sacrificial performances enjoined by the *Karmakandas* and regard for the sanctity of animal life resulted in the establishment of these religions.

5. Although the historical character of *Gautama Buddha* and *Vardhmaana Mahaavira* is now freely admitted, that of *Vaasudeva Krishna* the founder of the *Bhaagavata* religion is doubted by many. But recent researches claim that *Vaasudeva Krishna* of *Mathura* was human teacher belonging also to a republican *Kshatriya* clan known as *Saatvatas* or *Vrishnis*, a branch of the *Yaadava* tribe, which was famous in the age of the *Braahmanas*. In the *Chhaandogya Upanishad* *Krishna* is represented as a son of *Devaki* and a pupil of *Rishi Ghora-Angirasa*. The fundamental doctrines which appear as a *Bhagavat Geeta* are noticed in this *Upanishad*. It is thus claimed that *Vaasudeva Krishna* flourished before 600 B. C. and that the *Bhaagavata* religion was older than *Buddhism*. It is however stated that the popular stories about *Krishna's* amorous relations with *Gopis* and his association with *Raadha* are considered to belong to the latter *Puraanic* literature.

.. These great religious movements affected the evolution

of the religious, philosophical and political life of the people of Hindustan. At the very start, it may be stated that all these, constituted a revolt against the accepted religious creeds of the day. The bold *Upanishadic* speculation, which was the outcome of a creative intellect and critical spirit started the revolt against the ceremonials of the *Karma-kanda*. The result was a wild growth of new views and ideas leading to the foundation of several sects, and religious systems.

The *Chaarvaakas*, on one hand, preached absolute freedom of action leading to immoral practices masquerading in the name of religion.

The Buddhists, Jains, Saivas and Bhagavatas, on the other hand checked this wild growth by preaching their own religions.

Bhagavata Religion.

This was also a revolution on a moderate scale against the efficacy of sacrifice and austerities. They denounced the slaughter of animals and stressed the element of Bhakti (Devotion) over abstract knowledge. They substituted a personal God (Saguna) Hari in the place of this abstract idea of the universal soul (Brahman). The Bhagavata religion however was won over to the orthodox side by regarding Vaasudeva as an Avataar of the Vedic God Vishnu and by the identification of Vaasudeva with Naaraayana, the Supreme Being in the later Brahminical period. Thus the Bhagavata religion became a great religion of the orthodox Hindus who claim it as the religion of the Bhagavad Geeta.

Saivism.

Saivism claims its origin to the *Svetaavatar Upanishad*,

where worship of Saguna Iswara is mentioned. Rudra in the Rigveda is described as a cruel God, in Taittiriya Samhita both as a benevolent and a cruel God. As a benevolent God, he was termed Siva. The first historical reference to a definite religious sect of Saiva occurs in Patanjali (200 B. C.). Paashupata sect was mentioned in the Naaraayaniya Section of the Mahaabhaarata. Siva, the husband of Umaa, is said to have revealed the texts of this school. Saivism was elaborated in the Puraanas (Vaayu Puraana Ch. 23, Linga Puraana Ch. 24). They state that when Vaasudeva was born in Yadu family, Siva entered into a dead body and incarnated himself as a Brahmachaari in the name of Nakulisa, at a place now identified as Karvan (Kaayaavataara) in Baroda. The human figure of Siva on the coins of Wema Kadphises in the middle of 1st Century A. D. is regarded as a figure of Nakulisa. Saivism also advocates Saguna worship, where Siva is considered as an Avataara of God.

Buddhism.

It represents an extreme reaction in its disregard for sacrifices and in upholding the sanctity of animal life. It differed from the Bhaagavata in denying the existence of personal God (Saguna) or any God at all. Therefore, neither Bhakti nor Jnaana had much use for them.

Rigid morality was considered as a sole means for attaining salvation. Further, it denied the authority of the Vedic literature and refused to accept the social order of the day, i. e. the Chaaturvarnya Vyavasthaa or the caste system. Therefore, Buddhism was driven out of the fold of orthodox religion. But, it gradually gained power and popularity. The patronage of the Great Emperor Asoka gave a dominant position to this religion by his missionary

propaganda. Buddhism not only spread all over Hindustan but even far outside its boundaries and ultimately became a world religion, a position which even now it occupies as its votaries number about one third of the entire human race.

The adoption of Buddhism by diverse races with varying types and grades of civilization exerted a great influence upon its subsequent history. Some fundamental differences arose between the early and the late doctrines of Buddhism and two sects were formed. The old one was called Heenayaana system which depended on the Paali Canon and the new one, the Mahaayaana system depended on the Sanskrit texts. The Heenayaana system had no God and regarded Buddha as a perfect man, whose example is to be followed by each individual for reaching Nirvaana or freedom from bondage and cessation of existence, practically annihilation. Mahaayaana regarded Buddha as a God. Devotion to Buddha and worship of his images formed a more essential part than the pursuit of a grim austere life of morality. The Mahaayanaists are inspired for love of fellow beings. Their goal is not annihilation but one of positive Bliss. Consciously or unconsciously, the Mahaayaana was making a near approach to the Hindus. When the raw uncivilized races adopted Buddhism, they introduced into it many of their superstitions, rites and practices. The Mahaayaana had to tolerate them and developed a flexibility, which characterised it throughout its history. This attitude brought Buddhism great popularity and enabled it to stride in triumph across the whole continent of Asia.

Jainism.

The philosophic conception of *Jains* was different from that of the *Buddhists*. They regarded each individual soul

as eternal, but they had no conception of one eternal soul (*Paramaatmaa*) in which the individual souls are to be ultimately merged. As the *Jainas* did not accept the authority of the *Vedas*, they remained outside the pale of orthodox Hinduism. They also repudiated the system of caste in the beginning but now the *Varnaasrama Dharma* has again grown into the *Jains*. But the religious doctrine of Ahimsaa probably was as old as the *Veda* itself. The recent excavations of *Harappa* and *Mohon-zo-daro* brought to light some surprising facts and the *Jains* claim that the figures on the seals and the coins resembled the figures of the *Jain Tirthankars*. During the reign of the *Nanda* kings and the Emperor *Chandragupta Maurya*, there was a great impetus to the *jaina* religion. *Chandragupta* himself is said to have renounced the world and to have come down to South India along with a band of *Jaina* monks and spread the religion through out the Deccan with *Sravana Belgola* in Mysore as their cultural seat. The *Jains* played a very important part in the linguistic development of the country. They have left many valuable books on philosophy and medicine. The earliest literature in Canarese is of Jain authorship and an Aayurvedic text book called *Khagendra Mani Darpana* in Canarese is attributed to Jain authors. They also produced a rich literature in Sanskrit. The present day population of the *Jains* is about 13 lacs, distributed all over the country but predominantly in Rajputana and Gujarat. They are mostly traders and a large quantity of trade passes through their hands. They maintain many charitable institutions in the country such as dispensaries, dharmasaalas and houses for animal protection (Pinjarpoles). The reasons for the *Jaina* religion not spreading in this country are the strict rules of austerity and renunciation that are compulsory for the monks. Further they do not convert outsiders into their fold.

Buddhism and Jainism—Branches of Hinduism.

The Buddhistic and the Jain religions are somewhat like the sons, who separated from their father after taking from him as much of the welth as they wanted. They are not stranger religions. They are only branches or Panthas, ways of thought, which have come into existence in Hindustan out of the previously existing Hinduism. This position has now been established beyond doubt. Gautama Buddha had personal discussions and conversations with some highly learned Brahmins and learned ascetics who were well versed in "the four Vedas, the Vedaangas, Vyaakarana, Astronomy, Itihaasa Nighantu (Medicine) etc. and had converted them into his own religion. (Sutta-Nipaata and Vaththugaathaa. 30-45). Just like the Upanishads (Katha 1-18 and Munda 1. 2. 10), Buddha proved that Yajnaas are useless and that Brahma-Saayujyataa can be attained by Jnaana (Knowledge). Buddha accepted the doctrine of Karma. "kammanaa vattatee loko kammanaa vattatee pajaa (prajaa) kammanibandhanaa satta (satvaani) rathasaa neeva yaayato" (Suttani Vaasethasutta, 61).

that is; "the world, as also its inhabitants, continue in life as a result of Karma; just as the course of the moving chariot is regulated by its axis, so also is every created being bound by Karma".

Decline of Buddhism.

The causes for the expansion of Buddhism may be summed up as follows.—

I. The rational point of view taken by Buddha in regard to the ultimate problems of life and the Universe as against the efficacy of the rituals and sacrifices, which were already unpopular by the teachings of Upanishads.

2. The comprehensive moral code of Buddhism.
3. The appeal which Buddha made to the masses through the medium of the provincial languages.
4. The patronage of the kings and important clans and the personality of Buddha and the great personages, who followed him as his disciples.
5. Buddha's preaching of service of humanity and self-sacrifice was inspiring.

Although each of the above reasons was responsible for the spread of Buddhism, very soon however, the conditions were altered. Buddhism accepted the theory of Karma and rebirth, which were as much matters of belief as the existence of the soul, which was first denied by the Buddhism. Hinduism was not wanting in them. The Smritis codified these principles and popularised them, through the Puraanas. The doctrine of Ahimsa, which was taken up and preached by Buddhists and Jains and made their own, was already in the Saastras. It was no new invention. Buddhism demanded from its regular adherents a complete renunciation of worldly life and the fulfilment of a discipline to which very few could confine. The rules of the Sangha, which were framed by Buddha himself after a long experience of 40 years, were disobeyed in later years by his own followers. The monasteries degenerated into places of Taantrika worship. Immoral practices gradually crept into these places. Finally, when the patronage of the later kings was withdrawn and when it was bestowed on Hinduism and when the Hindus themselves set their house in order, by codifying all existing knowledge even incorporating into the Hindu Saastras, whatever was found good, and when Sankaraachaarya carried on his extensive campaign of preaching Hinduism, Buddhism ceased to be recognised as a separate religion but existed

side by side for some centuries in Hindustan. It was finally driven out by the invasions of the Mussalmans, who destroyed the monasteries and burnt their libraries.

Aayurveda in Bauddha Yuga

Aayurved was encouraged by the Buddhist Monks who studied it as a compulsory subject (See Universities in Ancient India Chap. 4), Asoka established many dispensaries for men and cattle throughout his empire. There is a tradition that Asoka prohibited dissections on account of the principles of Ahimsaa but I believe that this cannot be true, because the Buddhists had no prohibition for meat eating. Buddha himself used to eat the flesh known as Pavattaa, (Pravritta i. e., flesh is already there) of animals which have not been killed for eating. (Gita Rahasya. English Vol. 2 Chap. 6.)

The great Chemist Naagaarjuna belongs to this period (See page 93). The editions of Charaka and Susruta Samhitaas, now, available must have been compiled during this period.

On the whole, Aayurveda was at its highest eminence both in theoretical knowledge and in the practical application of the Science, throughout the length and breadth of the land. Life history of Jeevaka, the physician of Buddha, is given in Chapter 4.

4. Pauraanika Yuga.

300 A. D. to 1000 A. D.

[CONTENTS-Pauraanika Yuga-The Darsanas-Puraanas-Pramaanas in Puraanas-The chief characteristics of Puraanas-Hindu Calculation of time-History in Puraanas-Yoga in the

Puraanas— One divinity in Trinity— Summaries of some Puraanas—Padma Puraana—Vishnu Puraana—Brahma Vaivarta Puraana—Vaayu Puraana— Agni Puraana— Permanent value of the Puraanas— Evolution of Synthetic Hinduism—Smaartas and Vaishnavas— Vikramaaditya, patron of literature—Saiva Saints in the South— Kumaarila Bhatta— Sankaraachaarya— Disunion in the Country—Aayurvedā in Pauraanika Yuga.]

Pauraanika Yuga.

The fourth century A. D. may be regarded as a turning point in the history of Hindustan. Since that date, we find a gradual dominance of the Vedic religion and steady decline of Buddhism, and Jainism. The secterianism among the Hindus became less rigid—Saiva, Vaishnava, Saaktas and many minor religious sects were reconciled to each other, and evolved into a synthetic Hinduism.

The fortunes of the religions depended more or less on the patronage of Royal families. The Guptas dominated over nearly the whole of India for two centuries and they were powerful adherents to the Vaishnava sect, which made rapid progress at the cost of Buddhism. Some of the successors of the Guptas were Saivas, while others were Vaishnavas. We have also examples of individual kings like Harshavardhana who, although officially professing Saivism, was strongly inclined towards Buddhism; he patronised both religions.

In the Deccan, the early Chaalukya kings were patrons of Jainism. But, the later kings professed Vedic Religion. In the extreme south Jainism was patronised by the early Pallavas and Hoysalas were most ardent devotees of Vishnu. This shows that the Jains and Buddhists gradually lost the royal patronage in Hindustan. The people also turned towards

Vedic religion. The Taantrikas prevailed publicly and secretly with all their characteristics of mystic magical beliefs and degraded erotic practices, extreme veneration for the Guru and lax morality leading to gross indecency.

At the same time, the worship of images of God, with elaborate rituals and erections of large temples became a characteristic feature of this period. Finally, when Budhha was worshiped as an Avataara of Vishnu, Buddhism lost its ground and was ultimately completely effaced from Hindustan as a separate sect. During all this period, consolidation of Hinduism was taking place by the activity of the orthodox leaders, who boldly challenged the heterodox creeds of Buddhism and Jainism.

The Darsanas.

The Hindus first codified and systematised their philosophical and religious doctrines and put them on the necessary basis of logic and reason. In the attempt, they incorporated into their culture, all those elements of the heterodox systems, which appealed to them as the basis of the wide spread popularity of those systems. During this period covered by 400 to 200 B. C. the six systems of philosophy, called the Darsanas, which were already existing in diverse places were formulated and recognised as different schools of thought. The Nyaya, Veishika Saankhya, Yoga, Purva-meemaamsa and Vedaanta will be dealt within a separate section.

The Puraanas.

The Popularisation of the Vedic religion and Hindu philosophy was hastened through the publication of a number of Puraanas and the epics of the Raamaayana and Mahabhaarata.

The Puraanas are 18 and the Upapuraanas or auxiliary Puraanas are 18 in addition. The object of the Puraanas is to represent the natural descriptions from the Vedas and some historical features in the form of stories. The Vedas were by that time beyond the reach of the masses. The Puraanas and Itihaasas were purposely compiled in simple language so as to be useful for women and the masses. The Sootra-literature of the previous age was very concise whereas the treatment of the same subject in the Puraanas was elaborate and profusely illustrated. They were, to the people of those days, like the modern cinemas.

The compilation of the Puraanas was attributed to Vyaasa, the author of the Mahaabhaarata. The 18 Puraanas are :—

1. Brahma Puraana	10,000	Slokas.
2. Padma Puraana	55,000	"
3. Vaishnava Puraana	23,000	"
4. Saiva Puraana	24,000	"
5. Bhaagavata Puraana	18,000	"
6. Naaradiya Puraana	15,000	"
7. Maarkandeya Puraana	9,000	"
8. Aagneya Puraana	15,400	"
9. Bhavishyat Puraana	18,500	"
10. Brahma Vaivarta ..	18,000	"
11. Linga Puraana	11,000	"
12. Vaaraah Puraana	24,000	"
13. Skanda Puraana	18,000	"
14. Vaamana Puraana	10,000	"
15. Koorma Puraana	17,000	"
16. Matsya Puraana	19,000	"
17. Garuda Puraana	19,000	"
18. Brahmaanda Puraana	12,700	"

Upapuraanas.

1. Sanataumaara, 2. Naarasim'ha. 3. Naarada, 4. Siva, 5. Durvaasa, 6. Kapila, 7. Maanava, 8. Aushanasa, 9. Varuna, 10. Kalika, 11. Saamba, 12. Nandi, 13. Saura, 14. Paraasara, 15. Aaditya, 16. Maaheswara, 17. Bhaagavata, 18. Vasishtha. There are some other important Puraanas like Basava Puraana.

Pramaanas in Puraanas.

In the Meemaamsaa, Pratyaksha, (direct evidence.) Anumaana - (inference), Upamaana - (comparison), Sabda- (Valid testimony), Arthaapatti - (Circumstantial evidence), Anupalabdhi, are accepted as Pramaanas or authority, whereas in Puraanas they accept the other two proofs viz; Sambhava, (possibility) and Aitihya (tradition).

The chief Characteristics of the Puraanas.

The term Puraana means that which lives from of old, (Vaayu Puraana) or that which is always new though it is old (Sankara). The five characteristics of a Puraana are described as Sarga (Primary creation). Prati Sarga (Secondary creation), Vamsa (Geneology of God and Prajaapati), Manvantar (Periods of different Manus) and Vamsaanucharita (History of Royal Dynasties)—Amarakosha.

In Bhaagavata Puraana ten Lakshanas or characteristics of Puraanas are mentioned—1. Sarga (Primary creation), 2. Pratisarga or Visarga (Secondary creation), 3. Sthaana (Preservation of beings), 4. Poshana (Divine protection), 5. Manvantaras (Periods of Manus), 6. Ooti (Desire), 7. Eeshaanukathaa (Stories of Aavataaras), 8. Nirodha (Involuntion), 9. Mukti (Salvation), and 10. Aashraya (Ultimate abode).

Modern science is unable to express, how the senses and the mind could have emerged out of matter. Nor is it able to state how matter could be self-active or purposeful. The Puraanas tell us vividly how the primary evolution emerged from Prakriti or primordial matter, under the control of Eeswara and how the Indriyas or senses on one side and the Panchabhootas or gross elements on the other side, are evolved respectively from the Saattvika and Taamasika aspects of Prakriti.

Hindu Calculation of time.

The Puraanas also describe the historic evolution of the human destiny in the course of the unfoldment of time. The four Yugas (periods) are Krita, Tretaa, Dvaapara and Kali.

The Kaliyuga consists of 4,32,000 years, Dvaaparayuga is twice, Tretaayuga thrice and Krita Yuga four times, the duration of Kaliyuga. All the four Yugas put together form a Mahaayuga. Seventy one Mahaayugas form a Manvantara. There are 14 Manvantaras—1. Svaayambhuva, 2. Svaarochisa, 3. Uttama, 4. Taamasa, 5. Raivata, 6. Chaakshusha; 7. Vaisvasvata, 8. Saavarni, 9. Daksha Saavarni, 10. Brahma-saavarni, 11. Dharma Saavarni, 12. Rudra Saavarni, 13. Raucha-Daiva Saavarni, 14. Indra Saavarani. There are also Sandhis or twilight periods amounting to six Mahaayugas. Thus $14 \times 71 + 6$, i. e. one thousand Mahaayugas form one day of Brahma, and his night consists of one thousand Mahaayugas. In this way his age of one hundred years is the age of the world. All the worlds will be destroyed when his life period ends. Then the involution follows the reverse order and all the manifestation of Prakriti will be reabsorbed into it, which itself is reabsorbed in the Eeswara, who is one with the Absolute.

We are now in the first part (Prathama Paada) of Kaliyuga of the Vaivasvata Manvantara which by calculation comes up to about two hundred million years, which surprisingly corresponds with the calculation of the modern Geologists.

History in the Puraanas.

We find an account of the Royal dynasties of Hindustan in twelve Puraanas. It is necessary to test the stories therein in the light of archæology and epigraphy. The Puranaas refer to three great dynasties after the Mahaabhaarata war, Viz:—the line of the Purus, the line of the Iksvaakus and the line of Magadha Kings. The Geography of Puraanas is still not understood.

Yoga in the Puraanas.

It is said that they teach Yoga. The seven Dvipas or Islands surrounded by the seven seas are the seven Prakritis Viz:—the Panchabhootas, (5) Ahankaara, (1) and Buddhi. (1) The terminology corresponds with the Yogic terminology of the Padmas or Chakras of the human form. The Devas (Gods) are senses in their Saattvika nature (Div—to shine). and so on.

(Vide K Narayana Iyer's Permanent History of Bhaarat varsha and Cultural Heritage of India, Vol. I)

One divinity in Trinity.

Whether we call a Puraana a Saiva Puraana or a Vishnu Puraana, we find reference to the Leelaas or exploits of various Gods, in each of the Puraanas. For the purpose of intensifying devotion to one God, He is described as the supreme, but in later times imaginary and utterly baseless rivalry has been adumbrated between Siva and Vishnu. In the Vedas, there is no such rivalry at all. The Trinity

(Trimurty) is really and essentially one divinity with three devine forms associated with the three functions of creation, preservation and distruction of the world, as Brahmaa, Vishnu, Siva respectively. Each of these functions implies the others and contains others in a latent form. Vishnu is described as Siva's arrow and, Siva is described as Krishna's flute. (Krishnopanishad).

Short Summaries of Some Puraanaas.

The Puraanas contain about 4,00,000 verses on the whole and relate to a vast variety of subjects. Matsya Puraana gives a short summary of them.

The Puraanas generally based on the Vedas are the basis of morality and spirituality on which the fabric of modern Hinduism rests to day. These form in a way the kindergarten lessons for the moral upraising of the soul, which grows into fulfilment by means of Brahmayidyaa. They give us lessons on pure Pravritti (Enjoyment) and Nivritti (Renunciation) and fit us for the ascent towards the realisation of the highest spiritual truths taught in the Vedas and Vedaantas.

We have extracted below very short summaries of a few important Puraanas. The Puraanas are sometimes clas-
sed as Saatvika Puraanas, Rajasika Puraanas and Taamasika Puraanas and the various sects in this country quarrel over the importance of a particular Puraana, which the sect generally patronises.

Padma Puraana.

In the Padma Puraana the first portion, i. e. Srishti-
khanda describes how Brahmaa was born in the Padma
(lous). It then describes the creation according to the
Saamkhya terminology. Its speciality is that Brahmaa is

given a prominence which is absent in the other Puraanas. It also extols the supremacy of Vishnu. After treating of the divisions of time from an instant to the lifetime of Brahmaa, the book proceeds to describe the Prajaapatis, Rudras and Manus. It states the importance of Sraaddhas especially at Gaya. It describes the Lunar dynasty more elaborately than the Solar. This portion also describes various Vratas or observances at length. The second or Bhoomikhanda describes the life of Prahlada and the life of Vritraasura as also the history of Vena and Prithu. It then proceeds to describe the human aspects of holiness (Jangama-tirthas, i. e. the parents and the gurus) and the sacred shrines (Sthaavaratirthas) at Mahaakaala, Prabhaasa, Kurukshetra, etc. The third or Svargakhanda tells of the Upper spheres inhabited by the Gods, in the course of king Bharata's rise to Vaikuntha beyond the Polestar (Dhruva-mandala). The Puraana then describes the four castes and the four Aasramas and their duties as well as Karma-yoga and Jnaana-yoga. The fourth or Paataala khanda describes the nether regions. It also narrates in a detailed way the exploits of the Solar race. There is a praise of the Bhaagavata as the last and the best of the Puraanas.

The last portion of the Puraana is the Uttara Khanda which deals with the story of Jaalandhara. It speaks of the mantra. 'Om Lakshmi-Naaraayanaabhyam namah' as the greatest of all mantras, and says that it can be taught to all classes including the soodras and women after Deekshaa. It describes also the Para, Vyeccha and Vibhava aspects of Vishnu, and emphasizes the special holiness of the Kaartika month and of Ekaadasi. The last portion describes Kriya-yoga, which deals with practical devotion as distinct from Dhyana-yoga or Yoga of contemplation.

Vishnu Puraana.

The Vishnu Puraana was narrated by Paraasara to his pupil Maitreya. It is divided in to six parts, each of which is subdivided into many chapters. The first book gives an account of creation, which is due to the power of Purusha and Prakriti, Vishnu, who is Paramaatman, desired to create the universe so that the souls might work out their Karma and attain liberation by means of God-realization. Creation is due to his mercy (Kripaa) and is his sport (Leelaa). Then follows an account of the Avataara (incarnation) of the Lord as Vaaraah (boar). We then get a description of the Svayambhuva-manvantara and the Prajaapatis. Then follows a description of the churning of the ocean followed by the getting of nectar (Amrita), and of the life of Dhruva who by his devotion to Vishnu was lifted to the supreme height of the Dhruvamandala (the Pole-star). Dhruva's descendants are then described.

The second book describes the earth and the nether worlds and the courses of the planets. The third book describes the Manus, the Indras, the Gods, the Rishis and the Vyaasas. The fourth book deals with the genealogies of the kings of the Solar and the Lunar race and brings them up to the Kali yuga, among whom are included the Magadha and Aandhra Kings and even later ones. The fifth book describes the life of Krishna. The last book is philosophical and teaches how devotion to Lord Vishnu is the means of the attainment of beatitude.

Brahma-vaivarta Puraana.

In the Brahma-vaivarta Puraana we have a detailed description of Sri Krishna and Raadhaa whose supreme abode is the goloka. Sri Krishna is stated to be the supreme divine Principle from whom have come Prakriti, Brahmaa, Vishnu

and Siva. In the first portion (*Brahmakhanda*) we get a description of Vishnu and Naaraayana emerging from the right and left sides of Krishna and Brahma emerging from his navel. Raadhaa emerges from his heart. The Gopas and Gopees come from him and her respectively. Brahmaa then proceeds to create the ordinary universe. The second portion or Prakriti khanda describes the evolution of Prakriti according to the Saamkhya school of thought, but affirms that it is under the control of Eeswara and is his Sakti (power). Sakti has five aspects. viz., Raadhaa, Durgaa, Lakshmee, Sarasvatee and Saavitree. She has innumerable minor aspects as well. The third portion of the Puraana deals with the birth and exploits of Ganesha and the last portion deals with the life of Sri Krishna. The meeting of Krishna and Raadhaa and their union form the theme of a most remarkable and picturesque poetic description.

Vaayu Puraana.

In the Vaayu Puraana the worship of Siva is largely emphasized. In some of the lists of the main Puraanas, its place is sometimes taken by the Siva Puraana. The two works as now extant are separate. The Vayu Puraana is divided into two *khandas* (parts) and four *paadas* (quarters), and gives us the story of creation and the history of the kings of the solar and the Lunar race. It is worthy of note that the Puraana also contains accounts of the world. We find also expositions of the *Advaita* system of thought.

Agni Puraana.

In the Agni Puraana there is emphasis on the glory of Siva, but we also find descriptions of the glories of Vishnu. It contains in addition a detailed description of political science, law, judicature, medicine and rhetoric.

Permanent value of the Puraanas.

It is thus clear that the Puraanas are a vital portion of the scriptures of the Hindus. They are primarily an extension, amplification and illustration of the spiritual truths declared in the Vedas. Outsiders may call them legends like the works of fiction current to-day. Some insiders too may regard them as mere illustrative fictions or allegories, or as relating to yogic realities unconnected with the external material world. But the bulk of the Hindus and the main body of traditional opinion attribute to the Puraanas a double character, viz. illustrative value and impressive actuality. They have largely moulded public life, belief and they must be fully utilized by us if we are to realize the truths of the Vedas. Herein lies their permanent and supreme value to us.

Evolution of Synthetical Hinduism.

Hinduism has fully established its triumph in India on the eve of the Muslim conquest. Buddhism and Jainism, struggled against their rival with all their might, and in certain states attained to an equal rank with it. Kings like Harsha performed worship in accordance with the rituals of both, and gifts and benefactions were bestowed upon Buddhists as well as Braahmanas without distinction. But in this struggle for supremacy, Hinduism ultimately won and recovered its hold on the community. This success was in a large measure due to the efforts of Udayana and the untiring propaganda of Sankara, the greatest controversialist of the age, who assailed Buddhist doctrines with all the fire and passion of his soul, and by his dialectical skill worsted in debate his opponents all over the country. Buddhism disappeared from the country as a result of Sankara's crusade while Jainism remained content with a moderate expression

of dissent and ceased to aspire to the role of a universal religion. But, In Sankara's conception of *Sachchidaananda Brahma* as attributeless, there was no scope for Bhakti which presupposes a personal God, endowed with infinite beautiful qualities. The doctrine of *Maya* or illusion left no room for the exercise of love and piety in the world of reality, and therefore it 'laid the axe at the root of Vaisnavism'. The later Bhakti movement which saw its rise in the eleventh century began as a protest against Sankara's *Advaita* doctrine and Raamaanuja wrote his commentary on the Brahma Sootras mainly as a counterblast against Sankara's Bhaashya or commentaries, although it cannot be denied that Raamaanuja derived some of his inspiration from the Tamil saints who preceded him. Thus the Bhakti cult was revived and in the hands of teachers who came after Raamaanuja, it acquired a vast influence over men's minds. Meanwhile the progress of Hinduism continued. The spirit of compromise in Hinduism was so powerful that it overcame all oppositions by concessions and adaptations and assimilated the doctrines of other creeds into its own body. Buddhism was drawn into Hinduism and Buddha was accepted as an incarnation of Vishnu. The wonderful capacity for assimilation of this "all tolerant, all complaisant, all comprehensive, and all absorbing religion" brought into its fold men of different races who came into India from time to time; but it failed to absorb the Musalmans who were zealously devoted to their own faith.

Henceforth, the Hindus may be divided broadly into two classes, viz. 1. extreme sectarians, who confined their devotion and worship almost exclusively to their sectarian deity like Vishnu, Siva, Sakti, etc., and 2. general followers of the Hindu religion who revered and worshipped all these and other Gods, even though they might have been

specially attached to one sectarian deity and also followed some of the important Vedic rituals and practices.

Smaartas and Vaishnavas.

The followers of the Vedic rituals and Smritis are called Smartaas and they comprise about 80 per cent of the Hindus. The followers of Ramaanuja are called Vaishnavas and they comprise 20%. The Smaartas worship Vishnu, Sivu, Durgaa, Soorya, Ganesha, or any God of the Hindu Puntheon. There is a reconciliation of the different sects by establishing the identity of Vishnu and Siva. The image of Hari-Hara is a visible symbol of the doctrine. The general mass of Hindus to-day have a reverence for all the Hindu Gods, although they belong to one sect or other.

The six systems of Hindu philosophy, all proclaim the same eternal truth and are not really opposed to each other. Probodha Chandrodaya an allegorical Sanskrit drama of the later half of the 11th Century depicts this synthesis in a very beautiful manner.

In a famous scene in this drama, there is a dispute between the Buddhists, Jainas and followers of other heterodox sects on the one side, and the Vaishnavas, Saivas and Saaktas, aided by the six schools of philosophy on the other. The basic unity of orthodox Hinduism as against the heterodox sects, which is so vividly brought into prominence in this scene, forms a feature of Hinduism up to the present.

Vrikamaaditya, the Patron of Literature.

During the Pauraanic period there was a great revival of Hindu Dharma and the growth of literature in Sanskrit favoured its popularisation. The reign of Vikramaaditya, (525-583) was famous for an all round encouragement of the sciences, arts and literature. There were in his court Nava

Ratnas (9 Gems) whose names are familiar up to the present day.

“Dhanvantari Kshapanaka-Amarasimha-Sanku,
Vetaala Bhatta-Ghata Karpara-Kaalidaasa,
Khyato-Varaahamihira-Nripateh-Sabhaayaam,
Ratnaani Vai Vararuchirava Vikramasya”.

Of these 9 Great men, Dhanvantari was a physician, Kshapanaka was an astrologer, Amarasimha was a lexicographer, Sanku was an architect, Vetaalabhatta was master of Mantras (charms), Ghatakarpura was a geologist, Kaalidasa was a great poet; Varaahamihira, was an astronomer, Vararuchi was a praakrita linguist. Kshapanaka was a Jaina. Amarasimha was a Buddhist and the others were Hindus. Scientific knowledge including Chemistry, Arithmetics Algebra and Geometry spread from Hindustan to Arabia and further west during this period. Translations of Charka and Susruta appeared in the Arabic language. Architectural advancement was greatly noticed as in Bhuvaneshwar temple in Orissa, (650 A. D), Krishna temple at Karnic (9th Century) and the wonderful cave temples at Ellora (8th Century)

Saiva Saints in the South.

There was a great revival of Saivism more particularly in the South. The great saints Tirumoolar, Maanikka-Vaachaka, Tiruvachakam (600-630 A. D), Sambandha (639 A. D), Sundara moorthy, established the Saiva Sampradaya after shattering Jainism which was very popular in South India upto that time. * (Vide infra.)

Kumaarilabhatta.

Kumaarilabhatta was an Aandhra belonging to Jaya-

* See Cultural Heritage of India Vol. II—P. 235.

mangala, a village in the Ganjam District. In the 6th Century A. C, he laid the foundation for the revival of Hindu Dharma by criticising Jainism. He is said to have learnt all about Jainism by first disguising himself as a Jaina and to have started criticising Jainism thereafter.

There is a commentary of his on Purvameemamsaa. He is said to have paved the way for the advent of Sankaraachaarya later on.

Sankaraachaarya.

The down fall of Buddhism and Jainism was expedited by the work of the great philosopher and scholar of Malabar, the famous Sankaraachaarya. He was born at a village named Kaladi in the 7th Century A. D.

The condition of Hindustan at the time of his advent is described in Sankara Digvijaya by Aanandagiri as follows:-

"Keechicchandraparaah pare Kujaparaah Kechitta

Mandaasritaahs,

Kechitkaala paraah pare Pitriparaah, kechittu Naagesagaah
Kechittarkshya parascha, siddhanichayam sevanti Kechiddhiya
Kechidg. ndhar'va saadhyaadeen Bhootavetaalagaah paree
Evam Naanaaprabhedaanaam Nrinaam vrittiryaathepsitam
Kechit Svavrittim Vedaarthair pratipaadyaam samoochire
Anyonya matsaragrastaa parasparajayaishinaa
Nijechhaakritimangeshu dhaarayanti rushaanvitaan"

Aanandagiri mentions the numerous sects that sprang into existence and inculcated the worship of all kinds of gods from the noblest and highest to the most repulsive deities, taking delight in drunken orgies and grotesque rites*

The leaders of rival sects cited the authority of the Vedas in support of their doctrines and practices and wished to overpower one another. Some worshipped Siva, while others worshipped the fire, Ganesa, the Sun, Bhairava and Kaartika, the god of love, the god of death, Varuna, sky, water, the ghosts etc., and acted according to their own inclinations. With a boldness and vigour which is unrivalled in the history of religion, the great master Sankaaraachaarya made his triumphal progress from city to city, worsting his opponents in debate by means of his almost superhuman powers of expression and argument. The *Adviata* doctrine was firmly established, and the Buddhist monks and scholars were chased by Sankara's incisive logic and they sought refuge in the secluded regions of Magadha and certain other parts of Northern India. A great reform was accomplished, and the land was purged of the grosser forms of worship.

Disunion in the Country.

Whereas the Vedas laid the foundation of federal Government upwards from the self governing village units upto the 56 States of Hindustan, there was religious and sectarian rivalry and disunion by the 7 or 8 century A. D. The united action by all members and orders of Society constantly preached by the Vedas was forgotten. The kshaatra Dharma and responsibility of protecting the state gradually waned, paving the way for the entrance of foreigners embracing a defferent religion. The Raaajput States that had grown up in Rajaputrasthana had no central authority and each of them vied with another for supremacy. There were jealousies and animocities due to domestic quarrels and this helped the Muslim invaders to have a firm footing in Hindustan.

Aayurveda in the Pauraanika Yuga.

The progress of Aayurveda was steady in the Pauraanika Yuga.

1. Aayurveda was taught as a compulsory subject along with the studies of the Vedas and the Saastras. Aayurvedic literature increased with the growth of Sanskrit and allied languages. Many commentaries on Charaka and Susruta were attempted and the Puraanas propagated the study of Aayurveda as one of their themes.

2. The development of Aagama literature and the construction of temples on the large scale created a department of priesthood, who considered the study of Aayurveda and distribution of medicines as a part of their duties.

3. On the secular side, Kaamasastra contributed its share to the teaching of Eugenics in Aayurveda both on the Preventive and Curative sides.

4. The state provided for the punishment of those who disobeyed the rules of good conduct prescribed in Aayurveda and suitable laws of Public Health were enacted and duly administered through the magistracy, (See Artha Saastra of Kautilya and page-51. supra)

Individual care was bestowed on the study of the eight departments of Aayurveda (Ashtaanga Chikitsa). The Ashtaanga Samgraha of Vridha Vaagbhatta and the Ashtaanga Hridaya of Junior Vaagbhatta were both compiled during this period. Some Aayurvedic texts were taken by the Musalmans to Arabia and were translated under the patronage of Khalifa's in the 7th century A. D. and this became source of knowledge for the European nations. (See Bhakti-yuga). Thus, the practice of Aayurveda was of an high standard and was patronised by the Governments not only

in Hindustan but also in foreign countries. Its influence spread during this period to the whole world literally from China to Rome. One hundred and two hospitals (Aarogya Saalaas) were built in different provinces in Combodia (Kambuja) and medicines were supplied to these hospitals from the Royal stores under the rule of Jai Varman VII (1181. A. D.) *

In many of the puraanas such as Skaanda, Nandi, Agni, the benefits that were derived by one who establishes free dispensaries were described in high terms.

Matsya Puraana gives details for the selection of the soil, for building houses, the rules of Hygiene, for construction of houses, gardens, swimming pools and play grounds. In Garud a Puraana, Pinda Brahmaanda Nyaya is fully described and also the diseases due to committing certain sins.

It is during this period that Siddha literature developed. Rasa saastra (Chemistry) was divided into its three branches Viz., Kshema Vidyaa (Alchemy), Rasa Vidyaa (Metlalic Chemistry of Medicine), and Dhaatu Vidyaa (Industrial Chemistry). For further details refer History of Aayurveda. Chapter V.

V

BHAKTI YUGA

1000—to—1858.

[CONTENTS:—(1) Islaamic culture—First invasion by the Arabs—The Sultaans of Delhi—Religious preachings of Islaam—Value of prayers—The use of Japa and Yoga—Asamprajnaata Samaadhi—Sufism—The Age of Akbar. (2) Sikhism. (3) Zoroastrianism—Zarathushtra—Exodus of Paarses to Hindustan—Christianity—Fundamentals of Christian beliefs—The Holy Bible and Hindu Scriptures—The Sermon on the Mount—Charity, Renunciation and Faith—Spread of Christianity in Hindustan. (4) Religious Sects of the Hindus — Saivism—Veera Saivism—Saaktaas—The Vaishnavism—The Bhaagavata system—Alvars—Aandaal—Aachaaryas—Raamaanujaacharya. The Paancharaatu system—The Raadhaakrishna cult—Nimbaarka—Madhvaacharya—Raamaananda—Vallabhaacharya—Chaitanya—Naamadeva—Kabir—Suradaasa—Yogi Pantha — Ravidass, Jhaali—Miraabai—Tu'sidas. (5) Literature and medeival India—Amir Hussain—Badru-ud-din—Historical prose—Philosophical literature—Influence of Sanskrit—Medical literature under Muslim influence—Hindu literature—Jaya Deva's Gita Govinda — Roopa Goswami — Dharm Saastras — Saayana and Madhvaacharya—Jain writers—Influence of Bhakti movement — United India—Valour of the Hindus—Economic condition—Science and Religion—Synthesis of Hinduism.]

(1) Islaamic Culture. *

Eversince the seventh century A. D., Islam had been gradually penetrating into Hindustan and the political

* The following extracts on Islamic Culture and the value of prayers etc., have been taken from an excellent

domination of Mahammadan dynasties in the eleventh century led to a rapid increase of adherents to Islam. The social and political conditions in the country depended upon the paramount power wielded by section of people belonging to one religious sect or the other. Generally, the Bhakti cult of devotion to a particular God (Visishtadvaita) and fervent emotionalism characterise the political, cultural, religious and philosophical movements of this period. It is therefore called Bhakti Yuga.

First Invasion by the Arabs.*

(626—37) A. D.

The first Muslim invaders of Hindustan were the Arabs, who issued out of their desert homes after the death of Muhammad the Great prophet, to spread their doctrine throughout the World. The zeal for their faith enabled them to make themselves masters of Syria, Palestine, Egypt and Persia within 20 years. The stories of the fabulous wealth and of idolatry of Hindustan kindled their religious enthusiasm and political ambition. Their first expedition was in the year 636-37 A. D. during the reign of Khilafat of Omar to pillage the coasts of India. The Arabs were convinced that it was impossible to suppress the faiths of the conquered peoples. The temples were ravaged and the treasures were looted, but, owing to the well known infertility of the soil of Sindh, the conquest became a burden to their Khilaafat. Although from the political point of view, the

article contributed by the Hon'ble Mr. Justice M. T. Akbar K. C. B. A. LL. B. Cantab, Colombo Ceylon, to the Cultural Heritage of India, Vide Vol I.

* History of Mediaeval India by Iswari Prasad.

conquest of Sindh was insignificant, yet the effect of this conquest on Muslim culture was profound and far reaching.

When the Arabs came to Hindustan, they were astonished at the superiority of the civilization, which they found in this country. The sublimity of Hindu philosophical ideas and the richness and versatility of Hindu intellect were a strange revelation to them. The cardinal doctrine of Muslim theology, that there is one God, was already known to the Hindu saints and philosophers, and they found that, in the nobler arts, which enhanced the dignity of man, the Hindus far excelled them. The Indian musician, the mason, and the painter were as much admired by the Arabs as the philosopher and the man of learning. Tabari writes that Khalifa Haaroona once sent for an Indian physician to cure him of an obstinate and painful disease. The physician succeeded in restoring his patient to health and was allowed to return to Hindustan in safety. The Arabs learnt from the Hindus a great deal in the practical art of administration. The employment of Braahman officials on a large scale was due to their better knowledge, experience and fitness for discharging efficiently the duties of administration. Muslim historians are apt to forget or minimise the debt which the Saracenic civilisation owed to Indo-Aryan culture. A great many of the elements of Arabian culture, which afterwards had such a marvellous effect upon European civilisation, were borrowed from India. The Arab scholars sat at the feet of the Buddhist monks and Braahman pandits to learn philosophy, astronomy, mathematics, medicine, chemistry and other subjects of study. The court at Baghdad extended its patronage to Indian scholarship and during the Khilafat of Mansur (753-774 A. D.) Arab scholars went from Hindustan to Baghdad, who carried with them two books, the *Brahma*

Siddhaanta of Brahmagupta and his *Khanda-Khaadyaka*. These works were translated by Alfazaaree into Arabic with the help of Hindu scholars. It was from them that the Arabs learnt the first principles of scientific astronomy. Religious bigotry did not stand in the way of adopting Hindu culture and the Arabs freely borrowed what they found useful for themselves. They learnt from the Hindus the numerical figures and for this reason called them *Hindasaas*. The cause of Hindu learning received much encouragement from the ministerial family of the Baraamakaas during the Khilafat of Haaroon (786-808 A. D.) Though the Baraamakaas had been converted to Islam, they never felt enthusiastic about it, and prompted by their Hindu inclinations, they sent scholars to Hindustan to study medicine, astrology, pharmacology, and other sciences. (Al Biruni. translated by Sachau, Introduction, p. xxx). They invited Hindu scholars to Baghdad and appointed them as the chief physicians of their hospitals and asked them to translate from Sanskrit into Arabic works on medicine, philosophy, toxicology, astrology and other subjects. But, it must be admitted that the Muslims soon secularised the learning they borrowed from Hindustan, and presented it to the European world in a new garb, which was perhaps more acceptable to the European mind. When the Khilafat of Baghdad lost its importance after the extinction of the Abbaasid dynasty at the hands of Halaagoo, the Arab governors of Sindh became practically independent. The cultural connection was broken, and the Arabian scholars, no longer in contact with Hindu *savants*, turned to the study of the Hellenic art, literature, philosophy, and science. There is ample reason to endorse Havell's view that it was Hindustan, not Greece, that taught Islaam in the impressionable years of its youth, formed its philosophy and esoteric religious ideals and inspired its most character-

ristic expression in literature, art and architecture, (Havell Aryan Rule in India, p. 259).

The Sultaans of Delhi.

The Muslim power was first permanently established in India by the Turks at the end of the twelfth century A. D. The Turkish Sultaans of Delhi ultimately conquered the whole of India. But a succession of revolts leading to change of dynasties, and finally the invasion of Timurlane broke the solidarity of their power. The Mughals conquered India in the sixteenth century A. D. The Mughal rule lasted for nearly two hundred years after which their empire broke up into a number of independent States. This ultimately paved the way for the British conquest in the nineteenth century.

The Hindu rule was not altogether extinguished during the Muslim domination. The flourishing kingdom of Vijayanagar in South India, (c. 1350 A. D.) and the mighty empire of the Marathas in the Decan (c. 1650-1818 A. D.) kept alive the Hindu power and authority. In Northern India, the Raajputs maintained their independence—for a fairly long period and never lost their internal autonomy.

Lastly, we may refer to the Sikhs. Originally a religious sect founded by Naanak, the Sikhs rose to be a great military power towards the end of the Mughal rule. They established political authority over the Punjab and Kaashmir at the beginning of the nineteenth century. But, by the middle of the century their power was thoroughly crushed by the British.

The defeat of the Maratthas in 1818 and of the Sikhs in 1849 completed the supremacy of the British in India. The Sepoy Mutiny of 1857 was the last organized effort of the Indians to throw off the British authority in India has been established on a secure foundation.

Religious Preaching of Islaam.

Islaam is a religion which contributed considerably to the progress of the world and its civilisation. The downfall of the Islaamic kingdoms in modern times is due to its fall from the standards set in clear terms in the Holy Quran. Barbarism which occasionally marred the greatness of the culture of Islaam was due rather to individuals than to its tenets.

The acquisition of knowledge is essential in a Muslim and it is the corner stone on which the whole Islaamic religion rests, because this religion is meant to emphasize the one fact that there is only one God. The Holy Book says that man was made to worship this one God, and that this is his only function in life (51 : 56). Man's sole duty is to transform himself into a perfect slave of God. To attain to this state, that is to say, for man to concentrate his whole soul on God throughout his life, man has first to understand God to the best of his capacity; and it is quite clear that man's progress according to Islaam must depend on how far he has approximated his knowledge of God to the absolute truth about God.

The Quran describes Allah, (God), as the first, the last, the hidden and the manifest and says that whichever way you turn, you see His face and that He is with you wherever you are. Oh you who believe, let not your wealth or your children divert you from the remembrance of Allah (63-9).

A person should be God intoxicated. "When my servant practises My *dhikr* (remembrance) and his lips move for My sake, I am with him at the time. I am the companion of one, who remembers Me". "One who remains engaged in

My *dhikr*, without troubling Me with requests, I give him more than the man who asks Me". (Hadis-i-Qudsi).

(cf. Bhagavata Geeta IX-22).

"Ananyaaschintayanto maam ye janaah Paryupaasate
Teshaa nityaabhiyuktaanaam yogakshemam vahaamyaham"

"I look after and carry on the welfare and prosperity of those people who not being mindful of any one also think of Me and worship Me, those whose attention is thus always directed to Me."

Although God's essence is unknowable, yet man is to concentrate his whole soul into an attempt to understand Him through His attributes with the aid of knowledge. The acquisition of knowledge is necessary to transmute man into a complete slave of Allaah.

Thus it will be seen that Islaam preaches continuous remembrance of God and reliance in God as his ideal. It is *Advaita* philosophy of the Vaishnava type (Visistaadwaita) where intense devotion to God (Bhakti) and Prapatti, (absolute surrender of self to him) are essential. The Bhaktimaarga is in Islaam as in Hinduism a "stepping stone to Jnaana-maarga or Raajayoga as it is usually called. This Jnaana-maarga consists in understanding the unknowable God with the aid of knowledge.

As knowledge and science advance and progress, man begins to realize the Omnipotence and the Power of God and his own helplessness. The outstanding achievement of twentieth century physics is the recognition, that we are not yet in contact with ultimate Reality. If the scientist believes that man can ever come into contact with Reality through his senses and mind, then of course, he is sadly mistaken, a fact which the great eastern sages and prophets realized long ago, said the Quran (Over 1350 years ago)

"And with Him are the keys of the invisible. None but He knoweth them. And He knoweth what is in the land and the sea. Not a leaf falleth but He knoweth it, not a grain amid the darkness of the earth, naught of wet or dry but (it is noted) in a clear record." (VI, 69).

The Value of Prayers.

Muslims believe in Mantra Yoga, the mystic power of words, in helping a devotee to secure salvation by trust and faith in God.

Though acquisition of knowledge was necessary for man to set him in the path of acquiring a glimpse of the eternal vision in life, man can never comprehend Allah through the intellect alone. This seems to be the lesson which scientists have still to learn. But man can, according to the Quran, come into contact with Reality if he will follow the rules set forth therein.

"In Islaam as in every other great religion, there is provision for the spiritual development of all sorts and conditions of men and women from the Bedouin to the college professor, from the sinner to the saint. There is a minimum requirement fixed in the Islaamic religion before a man can be regarded as a true Muslim (1) He must make the declaration that there is no God but Allah and that Muhammad is His apostle, (2) pray at five fixed intervals of time during the day and night; (3) fast during the month of Ramzaan every year from sunrise to sunset; (4) contribute one fortieth of his income for the benefit of the poor and (5) make the Haj pilgrimage once in his lifetime. Besides these five obligations, the Holy Quran contains throughout its pages instructions for those, who wish to come into contact with Allah. All the Muslim compulsory Prayers are fixed and are the same as those performed by the Holy

Prophet These prayers were taught to the Prophet by Allah Himself through the angel Gabriel, Ru. ul Ameen of the Quran (26; 292—196). The prayers have to be uttered in Arabic in the same form and accent as Allah Himself taught. There is a mystic significance in this rigid and inflexible discipline which men like Mustapha Kemal Pasha and Western Professor of Arabic can never understand and will never understand. To most people, the capacity of men to utter words, to understand them, to be moved by them, so as to display all kinds of emotion, and to act on them seems to be the greatest miracle that God has created. All the other senses, for example, sight, hearing, touch and taste, reproduce certain aspects of what has been created by God. A tree reflects its image through the aid of light on man's eye; but that is because the tree is already there. Similarly, with the other senses. But words, the gift of words! Where they come from? Words have always been mysterious, so much so that the Holy Bible refers to them in equally mysterious language. The Eastern people have always realized the hidden significance of the power of words, for example, in charms, in sorcery, in invocations to the unseen powers. If we keep this fact in mind, we shall be able to understand the compelling power that the original Arabic words of prayer have on the minds of Muslims in inducing mystic consciousness. The very word Allah, we believe, was taught to our Prophet by Allah Himself through the Rulul Ameen. It is written in Arabic as follows: There is an *alif* or letter "a" which stands by itself indicating the oneness and uniqueness of God. Then there are two "ls" but the accent falls on the second "l" and the sounds fall back on the first "l" and the whole word ends with 'hu'. The hidden meaning is this; If man wants to understand who Allah is, he must start with the conviction that He

One and that He alone exists, and then, he must use his intellect (the second 'l') to get a glimmering of the might and power and love of this Omnipotent, Ommipresent Allah through His attributes; then from the first 'l' (the Alam Malakut), the angelic world he will get just a dim light, which will increase with practice and that light will show him the second *alif*, which is *hu* or in English *he*. The word Allah is written in Arabic by really five strokes and is represented in the fingers of each hand, and the toes of each foot, and can be seen in man's face and in his body. The word '*hu*' is imprinted in the mans face, and the Arabic word Muhammad is in the whole of man's body. The word *Allah* is frequently used by Muslim Sufis to induce mystic consciousness. We, Muslims further believe that the heart beats this word Allah and that the wind in the brain mutters the word *hu* as one can hear for himself if he closes both his ears with his hands. This process is called *Laya Yoga* in Hindu philosophy.

The Islaamic formula "There is no God but Allah and Muhammad is the messenger of Allah" gives the key to the whole religion. The first portion contains a negation and an affirmation, the denial being that the attributes of Allah can ever be ascribed to a created being; and the affirmation that the attributes of Allah belong to and are appropriate only to Allah. An idolator who worships an idol is a sinner if he regards the idol as the possessor of certain attributes, but he commits no sin if he is conscious of the fact that certain attributes represented by the features and pose of the idol are the attridutes of God.

The diversity and difference in the conception of God in the heart of man was due not to there being differnt Gods, but because the *nafs* or ego of man was obscured by

his own desires and sins; hence the distorted and varying conceptions in the mind of man. The remedy suggested by the Quran is for man to turn to God and to kill himself; that is to say, in the words of the Holy Prophet, to die before death, to kill one's desire.

The whole Islaamic formula "*La ilaaha ilaaha Muham-madurrasulallaah*" is of vast importance in the part that it plays in Islaamic mysticism. It will be noticed that there is no step between the two parts, nor are they joined by a conjunction. The two parts are the two wings, the fear of Allah and the love of Allah. When one talks of the love of God, it means very little, for God is intangible and cannot be sensed. That is why, there must be some representative of God, who will appear as man and who will evoke from man this feeling of love, by the noble life he will lead, for example, Buddha, Jesus Christ, Moses, Muhammad and Raamaanuja. The Holy Quran says (3; 30): "Say; If you love Allah, then follow me, Allah will love you and forgive you your faults and Allah is forgiving, merciful" The condition laid down is that to love Allah and to get His love in return the only way in Islaam is to follow the Holy Prophet's rules and his example.

The Use of Japa in Yoga.

It is always the heart, the inner intuition, to which God whispers, and if it is properly attuned, one can even acquire knowledge, wisdom, solace, comfort, guidance in troubles and protection from harm. The Quran is full of examples of this kind of knowledge and guidance acquired by the Prophets of old. It is the aim and object of every Muslim Sufi, not only to get a vision of the next world in this life itself, but actually to hear Allah's mysterious messages and voice every minute of his life.

The slow, quiet recital of a name of Allah is necessary to strip his mind of all mental images and to induce that love for Allah which will suddenly transport him from worldly consciousness to mystic consciousness. The journey must begin with the brain empty, that is to say, from nothing.

Asamprajnaata Samaadhi.

The Muslim devotees believe like the Hindus in the power of Yoga (Chitta vritti nirodh) in helping to realize the ultimate Reality (Brahman) and in Asamprajnaata Samaadhi or state of absorption of the mind when Kaivalya is obtained as in Paatanjala Yoga.

"Prayers have three veils, whereof the first is prayers uttered only by the tongue; the second is when the mind, by hard endeavour and by firment resolve reaches a point at which, being untroubled by evil suggestions, it is able to concentrate itself on divine matters; the third veil is when the mind can with difficulty be diverted from dwelling on divine matters. But the marrow of prayer is seen when He, who is invoked by prayer, takes possession of the mind of him who prays, and the mind of the latter is absorbed in God whom he addresses, his prayers ceasing and no self-consciousness abiding in him, even to this extent that a mere thought about his prayers appears to him a veil and a hindrance. This state is called 'absorption' by the doctors of mystical lore, when a man is so utterly absorbed that he perceives nothing of his bodily members, nothing of what is passing without, nothing of what occurs to his mind-yea, when he is, as it were, absent from all these things whatsoever, journeying first to his Lord, then in his Lord.

Sufism.

Sufism is a combination of Hindu and Islaamic faiths

prevalent more particularly in Sindh,

At present, there are several places in Sindh that act as definite centres of Sufistic influence. There is the ancient village of Johk near Tande Mahomed Khan where an annual gathering takes place, the place of Sah Inayet, also known Saah Sahid; there is the place of Sachal near Ranipur; that of Bedil and Bekas at Rehri; of Dalpat and Kutub Sah at Hyderabad, another at Tande Saneendad, two at Kumber—practically all over the place Great Sufis, men of realization, have had their lives spent here in Sindh and after they left their union—'Visal', as they call it—with God, their work is continued by their successors.

But, what is peculiar is that the heart of Sindh is Sufistic. There is absence of caste and creed, absence of untouchability, and in the village where the influence of intellectual developments has not broken the hearts into bits you see, all over, a desire to prefer others' comfort to one's own; there is the heart's hospitality, openness to receive any new-comer, and all social customs are observed with that geniality that makes them living and useful to all as one whole. All this is Sufistic in essence. The stories that are current are all Sufistic given by great Sufis, illustrating Sufistic truths and experiences, and very simple and telling.

The Sufistic attitude expressed by 'Hands in work, and heart with the Beloved', just suits him. The Sufistic doctrine is that God is the only being and that He is the only real agent, Jallalauddin Rumi—a Sufi author in his great Masnavi says 'I am as the pen in the fingers of the writers, I am not in a position to obey or not, at will'. Guru Arjuna (a Great Guru) whom the Sufis included in their fold has the same idea running through out his songs

'Sukhamani Ashta Padi, II- "The Cause of Causes in one God, there is none other, What pleaseth him shall come to pass."

The question whether God is the only Being and other beings are mere appearances, whether He is the one single source of all the uneasing activity, simply does not arise. For the sake of the comfort it brings, if we wish to accept it as true, there is nothing to prevent us from doing so. Some rearrangement of our idea is necessary, which is easily accomplished.

For all these ideas the Sufi Saadhakas are called Pirs, and are very much loved by the people, who approach them for consolation in their distress. "One instant in the company of Saint is better than a hundred years of prayers and piety". Rumi.

You go to a Sufi Saint, stay there for some time and though nothing appears to have happened, you return somewhat changed. Something occurs between the two hearts, behind the conscious part of your self. Hindus and Muslims approached the Sufi saint without any distinction of caste and religion. Often in gathering round a Saint, it is seen that while a question is asked by one, the saints reply solves difficulties of another's; and that other is noticed to have come quite casually.*

"The Sindhi's mind appears to be open like Sindh itself. Geographically, it has access to it on all sides. First the Buddhistic influence, then the Muslim invasion had their complete influence and the Muslim faith in the oneness of God and the brotherhood of man touched their minds already

* I have seen this to happen when people go to visit Ramana Maharshi in Tiruvannamali A. L.

prepared by Buddhist Monks and to-day, we find that 80 per cent of the people of Sindh are, although belonging to the Islaamic religion, following Hinduism in thought and in their routine life."

"The Sufi Fakirs are quite similar to the Siddhas and Yogis of Hindu Philosophy. They are believed to perform miracles by their yogic powers. There is much similarity between the Sufi religion and Sikhism of Guru Naanak, the first Guru and originator of Sikhism."

From the above extracts, it will be clearly seen that Islaamic culture is based upon the Hindu *Advaita* philosophy and that the principles of Bhaktiyoga, Mantrayoga- Dhyana yoga and Raaja yoga have been more or less completely absorbed in the Islaamic culture. *

Although the Islamic religion was introduced into Hindustan from outside through Muslim invasions, it was only a revival of the monotheistic doctrines that, originally belonged to Hindustan and formed the very core of the Upanishad teachings.

"Ekam Sat, Vipraah Bahudhaa Vadanti—The truth is one—Only the sages express it in different way".

The age of Akbar.

The age of Akbar was very remarkable for the spirit of freedom and toleration in religion. With the help of Aziz Kuka, Abul Faizi and others, Akbar founded his faith of "Din Illaahi" on the ideal of a universal religion.

The brothers, Abul Fazl and Faizi were great scholars in the religious literatures of both Hinduism and Islam and in Greek and Indian philosophy. Owing to the training

* See section 2. Darsanas.

they received from their father Mubaarak, a man of great wisdom and learning, they were free from sectarian ideals about religion.

During the reign of Akbar, Hindu religious books like Raamaayana and Mahaabhaarata were translated into Persian by Abdul Khaader Badowni with the help of Persian and Hindu scholars. It is also learnt that Atharva Veda was translated in this manner. In order to establish comparison between the teachings of the Holy Quran and the Upanishads, Akbar got an Upanishad in the name of Allopanishad composed by the scholars under his supervision. The following extracts will be found interesting:—

* “Om ! Ammallaam Ille Mitraavaruno divyaani dhatte
Illalle Varunoraaja punardaduhu
Hialoo mimito Ilkam Illalleti

* * *

Allojyeshtam, Sreshtam, Paramam. Poornam
Brahmanamallah

Allorasura Mahammadarakam varaya Allo

* * *

Ilkaakabara Illakabara Illalleti
Ilkaalaah Illaa Illaallaa Anaadi
Swaroopaa Atharvanisaakhaam Hraam Hreem.

(2)

Sikhism. §

The Sikh religion is professed to-day by nearly four million persons, four fifths of whom live in the Punjab,

* Andhra Vignaana Saraswam.

§ The following extracts on Culture of the Sikh

though there is hardly any part of the world where a Sikh is not to be found. Further a large number of Hindus of Sindh and Punjab are profoundly influenced by the teachings of the Sikh Gurus of preceptors. Although originally a religious sect, the Sikh has to become a fighting race for the preseavance of their faith and for their own physical existence. They suffer torture and die literally by inches to save the Sikh faith. The lion of the Punjab, Ranjit Singh was the last of its heroes.

Sikhism was founded conjointly by 10 Gurus. At the close of the 17th Century, it assumed its final shape by the creation of the Khaalsaa by Guru Govinda Singh, the tenth and the last Guru.

Nanak, the first Guru was born in 1469 at Nankana Sahib near Lahore. He was a divinely inspired personality and was madly in love with the Creator. He endeavoured to purge Hinduism and Islam of wrong practices and superstitions.

He tried to remove the emphasis on mere forms and rituals, which divided people and made them quarrel with one another. He attached supreme importance to the oneness of God and brotherhood of man and to the remembrance of and devotion to the Lord. He did not observe any distinction between man and man or between man and woman, and attempted to achieve the unity of all through the service of humanity. He was loved and admired by persons of all faiths and sects and had followers among the Hindus and Muslims alike. He believed in the dignity and value of a householder. During the last part of his life, he settled down

Religion are taken from the excellent articles contributed to the Cultural Heritage of India See Vol. II.

supreme act of self-preservation. We gaze at the risen Lord -I am writing this on the Easter morning-and a new creation stands established and confirmed.

The message of Christ is of cosmic significance-not a creed for a section nor a religion for a few. Humanity needs it. Humanity lies in it. Christ is no religious leader. He is the fact-the fact of a new creation. That India-her best and noblest sons and daughters-with vision purified by a matchless spiritual heritage, may see the cosmic significance of Jesus, and seeing may help in the new creation that is called the kingdom of God, is the prayer of one who would subscribe himself as his unworthy servant."

The Holy Bible and Hindu Scriptures.

It is now well established that Buddhist missionaries visited Greece and other parts of Europe 3 or 4 hundred years before the birth of Christ. Asoka encouraged these missionaries. It is no wonder, that similarities of ideas and words exist between the Buddhistic literature and the Bible. Some Christian missionaries attempted to show from such similarity between the Bhagavadgita and the Bible, that the Bhagavatgeeta was inspired by the teaching of Christ. There is no doubt that hundreds of instances of similarity between the New Testament and the Bhagavad Geeta may be quoted. For instance:-the sentence "At that day, ye shall know that I am in my Father and ye in me, and I in You" (John. 14.20), is not only similar in meaning but also almost word for word the same as the following sentences from the Gita, namely. "Yena Bhuutaany Asesena draksyas Aat many atho mayi" (i. e. "by this Knowledge, you will realise that all beings are in you, and also in Me")- (Gi, 4. 35), and "yo maam pasyati sarvatra sarvam camayi pasyati", (i. e. "he

who sees that I, the Paramesvara, Paramaatman am everywhere, and sees all beings in Me). Similarly, the sentence "he that loveth me, shall be loved of my Father and will love him" (John 14. 21,) is in every way similar to the sentence "priyo hi jnaanino tyartham alam sa ca mama priyah" (e. e., "I am much beloved of the Jnaani and I too love (much) the Jnaani").

To decide whether the Bible or the Bhagavad Geeta was earlier we have to independently determine the date of the two books. When it is now definitely known that the Buddhistic literature and the Geeta were at least three or four centuries older than the New Testament, it is perfectly possible that such of the doctrines enunciated in the Christian Bible as are similar to those of the Geeta must have been taken into the Bible from the Geeta or from the Vedic religion by Christ or His Disciples, It may be indirectly through Buddhist Teachings or directly.

Tilak has proved in his Geeta Rahasya that sect of ascetics called Esi or Esin suddenly came from somewhere into the Jewish countries about 200 years at most before Christ. Although these Esis belonged to the Jewish religion, yet, they had given up sacrificial ritual, and used to spend their lives in a peaceful place in contemplation of the Almighty, and they used at most to take part in harmless occupations like agriculture etc. for maintaining themselves. The most prominent principles of this sect were to remain celibates, to eschew meat and liquor, not to take oaths, and to live together socially in monasteries and, if any one of them acquired property of the society and if any had a desire to enter their sect, it was necessary for him to serve as an apprentice for at least three years; and after that to consent to observe certain rules. Their monastery was at Endgi on the western coast of the Dead Sea and they used to live

there peacefully and as ascetics. The respectfull references made by Christ Himself and His disciples in the New Testament to the opinions of the Esi sect (Mathew 5. 34: 19. 12; James 5. 12; The Acts 4. 32-35), clearly show that Jesus Christ was a follower of this sect, and He has to a great extent furthered the renunciatory religion of this sect.

There is no information to be found in the Bible as to what Christ was doing from the 12th to the 30th year of His life, or where He was during that period'. And it is clear that He must have spent this time in the acquisition of knowledge, in religious meditation, and in travel. Therefore, it is impossible to say definitely that He could not have come into contact, directly or indirectly, with Buddhist monks during this period of His life; because, the activities of Buddhist monks had at that date gone as far as Greece. There is a book to be found in a Buddhist monastery in Nepal that Jesus Christ had at that time come to India and that He there acquired the knowledge of Buddhism.

Sermon on the Mount.

(St. Mathews. Cha P. 5-6)

The Sermon on the Mount gives the gist of the preachings of Christ as the following extracts will show.

The fame of Jesus for healing all kinds of sickness among the people of Jerusalem attracted crowds of people and seeing the multitudes, he went up to a mountain and lectured as follows:—

“Blessed are the poor in Spirit; for theirs is
the Kingdom of Heaven
Blessed are they that mourn; for they shall be comforted,
Blessed are the meek; for they shall inherit the earth.

Blessed are they who do hunger and thirst after
righteousness; for they shall be filled.

Blessed are the merciful; for they shall obtain mercy.

Blessed are the pure in heart; for they shall see God.

Blessed are peacemakers; for they shall be called
the children of God.

Blessed are they which are persecuted for righteousness' sake; for theirs is the kingdom of heaven.

Blessed are ye when men shall revile you, and persecute you, and shall say all manner of evil against you falsely, for may sake.

Rejoice, and be exceeding glad, for great is your reward in heaven, for so persecuted they the prophets before you :

* * *

After this manner therefore pray ye
Our Pather which art in Heaven, Hallowed be thy name,
Thy Kingdom come. Thy will be done in earth, as it is
in Heaven,

Give us this day our daily bread.

And forgive us our debts, as we forgive our debtors
And lead us not into temptation, but deliver us
from evil. For thine is the kingdom, and the power,
and the glory, for ever.

Charity, Renunciation and Faith.

Charity, renunciation and faith are the cardinal principles of Christian religion. There is no distinction of caste in Christianity as in true Vaishnavism. God loves any one who is devoted to him and worships Him with faith. You should not hate even your enemies.

The principles of charity and renunciation which were preached by Buddhists were copied by Jesus Christ to which he added the philosophy of devotion. (faith-Bhakti).

Spread of Christianity in Hindustan.

There are evidences as to the spread of Christianity in Hindustan in the first century after Christ. The Christian Churches on the West coast of Cochin and San-Thome at Mylapore on the East Coast were very ancient. There are many sections, amongst the Christians called Catholics, Protestants, Jesuits. The Church of England, the Church of Scotland, the American Mission and so on. They all have different Missionary Societies doing propaganda and converting people to Christianity. The Roman Catholics worship idols and resemble the Hindus very much and have the greatest number of converts in the South. During the last 2 or 3 centuries, the Missionary propaganda increased along with the trade of the Western Nations in this country, who took advantage of the state of disunion and established political sovereignty. The political superiority in turn gave a stimulus to the Christian movement. They established colleges and schools, orphanages and dispensaries. For some time, this had a demoralizing influence upon the people but with the spread of the wave of nationalism most of the emancipation of the country. Religion did not interfere with their patriotism but fostered it to some extent.

[4]

Religious Sects of the Hindus.

Saivism.

In addition to the Puranas such as Vayu, Linga and Kurma Puranas, the Saiva theism was expounded in the

Agamas. There are twentyeight of these manuals, each of which has got a number of Upaagamas, the total number of texts reaching up to 198. The Agamas were, composed before the seventh century A. D. and their dualistic teaching formed the foundation of a new Saiva school, which is usually referred to as Agamic saivism. The Advaita philosophy of Sankara gave a new turn to Saivism. A distinct school flourished in Kashmir, about the middle of the ninth century A. D., mainly under the influence of Sankara's philosophy, and substituted the Advaita philosophy for the dualistic teachings of the Agamas.

Saivism flourished in south India (See page 127 Supra) and there is an extensive Tamil literature consisting of eleven collections. The author of the first three collections of hymns is the well-known saint Jnanasambandha, who probably flourished in the Seventh Century A. D. The eleven collections together with the Tamil Purana, called Periyapurana constitute the sacred literature of the saints and forms the foundation of Tamil Saivism. The first seven collections, known as Tevaram and composed by the saints Jnanasambandha, his older contemporary Appar, and Sundarar, are regarded as equivalent to the Veda and are sung along with Vedic hymns in certain religious processions. The eighth collection Tirumantram of Tirumular reflects the theology of the Agamas, and both are masterpieces of poetic composition. The patronage of the later Pallava kings (from 6th cent. A. D.) and the mighty Chola emperors (10th cent. A. D.) gave a great impetus to Saivism in the Dravida country.

A further development of Tamil Saivism took place in the thirteenth and fourteenth centuries A. D. perhaps even a little earlier. This was the rise of Siva Siddhanta. The

Agamas were now replaced by the fourteen Siddhantasastras which laid the foundation of this new system.

Veera Saivas.

An influential and very powerful Saiva sect known Vira-Saiva or Lingayats rose in the Karnataka and Marathi countries. The early history of the sect is obscure. The names of Renukachaarya born at Kolanupaaka in Nizam, and Panditaaraadhyā who lived at Bezvada are associated with the school of Veera Saiva. Renukaachaarya started 18 Mathaas. The Mathaas of Panditaaraadhyā are now seen at Aatmakur and Guntakal. Veerasaivism was brought into prominence by Basaveswara, the Brahmin prime minister of Vijjana who had usurped the Chalukya throne about 1160 A. D. Basava Puraana deals with his exploits. There are many Ayurvedic subjects dealt with in this Puraana. This new sect flourished at the cost of Jainism and Buddhism and was the main cause of their decay in the Deccan and Kanarese districts, which constitute now its main stronghold.

The Vira-Saivas have several peculiar characteristics. They give great prominence to the monasteries. "In every Lingayat village, there is a monastery and every Lingayat must belong to a monastery and have a guru. He need not visit a temple at all." The members of the sect worship Siva in his phallic form, reject the authority of the Vedas, disbelieve in the doctrine of rebirth, object to child marriage and approve of the remarriage of widows.

The Saaktas.

The cult of Sakti, wife of Siva, attained a great pre-dominance during this period. It is based upon the Samkhya philosophy according to which Spirit or Purusha (here identi-

fied with Siva) is inactive, while Prakriti, (identified with Sakti) is productive and is the universal material cause. Hence Sakti is superior to Siva.

The System lays stress on the instinctive power of sounds and the presence, in the human body of a large number of minute channels or threads of occult force, called nadis, and six great centres of occult force (chakras) described as so many lotuses, one above the other. Hence, arise the supernatural powers of the mantras or mystic syllables such as hrim; hum; phut, etc., and the working of miracles by mystic forms of yoga. Beside, the Saktas also believe in the magic power of diagrams (yantras) and ritualistic gestures made with fingers (mudras).

The worship of the goddess, Sakti was accompanied with sacrifices of animals and human beings. But, the most characteristic feature of the cult was the *chakra-puja*, i. e. circle worship in which an equal number of men and women sit round a circle and, uttering mystic mantras, partake of the panchatattva consisting of five elements, viz. wine, meat, fish, parched grain and sex. Many sorcerous practices formed a part of the cult, and a picture of this is given in the Sanskrit drama *Malati Madhwa*. Detailed instructions of these practices are given in the texts known as the Tantras. Hence, Tantricism is used as a general name for similar rituals, which are found in many religious sects. The Saiva Kapaalikas and Kaalamukhas, for example, followed similar rituals and practices and they are found associated with the worship of many other goddesses.

Taken at its best, the Tantrika doctrine, both in Brahmanical religions and Buddhism, is a form of Yoga. By worshipping Sakti, Prajna (Mahayanist goddess) or other goddesses in the manner indicated above, it seeks to attain

in a supernatural manner, and in an incredibly short time, objects of either material nature (wealth, longevity, invulnerability, etc) or spiritual character (power of evoking Buddha or union with some divinity even in this life).

Some Tantras, however, indulge in theories and practices which are revolting and horrible.

Vaishnavism.

Three systems are differentiated in Vaishnavism.

1. The Bhagavatha System.
2. The Paancharaatra System.
3. The Radhakrishna Cult.

1. The Bhaagavata System.

It is generally believed that the *Bhaagavata Purana* was written in South India. Whether this is true or not there is no doubt that the pure devotional element of Vaishnavism flourished in the Tamil country.

Alwars.

The most remarkable specimen of this is contained in the songs of the famous Alwars. Their number is usually reckoned as twelve, and although their dates are uncertain, they may be all placed between the fifth and twelfth centuries A. D. Their devotional songs, called *Prabandhas*, written mostly in Tamil, are known as the Vaishnava Veda, and their images are worshipped along with those of Vishnu.

The Alwars are traditionally twelve in number. They belonged to the Pallava period in the main and have to be assigned from the seventh century to the close of the eighth and the first years of the ninth. They belonged to all parts of the Tamil area, and one of them at least was a king of Malabar. They included the fair sex too, as one of the most

popular of them is the celebrated Goda or Andal to whom a magnificent temple was built and dedicated in later times at Srivalliputtur, her birth place. in Tinnevely District. The Alvars included a saint of the Depressed classes, the famous Tirupanna Alvar. The Alvar movement ignored the distinction of caste and sex, of knowledge and ignorance. It attached importance only to the love of God as the means of salvation.

Andal.

Vishuuchitta's adopted daughter was the celebrated Goda (Andal) the only woman amongst the Alvars, Tradition has made her the avatara of Lakshmi or Bhudevi herself. Refusing to wed any man Goda led the life of a lover of the Lord like the ancient Gopis and devoted herself to divine service in the local temple. In memory of these services she has left two poems known as Tiruppavai and the Nachchiyar-Tirumoli which are exceedingly popular with the Sri Vaishnavas. Goda in order to propitiate the God of her heart subjected herself to the hardships of various vows and penances. She fasted, prayed and in imitation of the Gopies felt herself unable to live away from Krishna and so performed similar vows throughout the month of Margali in the temple. Rising before dawn she proceeded with a few companions, to the local temple and performed her humble services to the deity and her zeal displayed in the next thirty days is described in the Tiruppavai. Choosing the Lord of Srirangam as her bridegroom she imagined herself to be his bride and behaved as such. In the ecstasy of her spiritual passion she would act like a mad woman oblivious of what passed round her. She imagined herself what she desired to be. She would think that Krishna was performing his exploits before her. Sometimes she would imagine

herself to be Krishna and address the Gopies as such. The Tirumoli contains the outpourings of this maddening love to God. Traditions record that Goda was eventually absorbed in the image of Ranganatha at Srirangam.

Aachaaryas.

The next great landmark in the history of Tamil Vaishnavism is the rise of a school of philosophers known as *acharyas*. Nathamuni, the first of these, flourished about the end of the tenth or the beginning of the eleventh century A. D. He organized the Sri-Vaishnavas, and popularized the cult to the masses by collecting the songs of Alvars, setting them to Dravidian music, and having them in the temples. But he was also a great theologian and his school took up the task of giving a philosophical background to the Vaishnava theories and creeds. Nathamuni was followed by three *acharyas*, the last of whom, his grandson Yamunacharya, was a great scholar.

Raamaanujaacharya

Yamunacharya was succeeded by the famous Ramanuja (1016 A. D.) He studied in the usual course, based on the *Veda* and its subsidiary studies, under the guidance of *Yadava Prakasa*, the head of the philosophical academy at Kanchi, who was himself an Advaita teacher of renown. Then, he went to *Sringeri* when he was invited to take the place of *Yaamunacharya*, which he did and was finally placed in charge of the management of the temple. The learning and position of the great teacher aroused bitter jealousy, and an attempt was made to murder him. In the later years of his life, he was subjected to persecution by the Chola King, Kulettunga, who asked him to subscribe to the Saiva creed. Considerations of safety led him to migrate to the dominions

of the Heysala Yadava Prince Vishnuvardhana, where he succeeded in converting the brother of the reigning prince to Vaisnavism, Ramanuja imbibed the spirit of Bhakti from the Alvares or the Tamil saints. His principal doctrine is known as Visishtadvaita or qualified monism. His great task was to put the religion on a secure philosophical basis. The great Sankaracharya's doctrine of monism (Advaitavada) as a direct challenge to the bhakti cult. If there is only one Absolute Spirit, and all else is unreal, there is no scope for devotion of the Supreme God by the individual, for the two are really one and the same. Ramanuja set up against it a full and critical exposition of the *Visishtadvaitavada* or qualified monism, first propounded by Yamunacharya. It was based upon the Upanishads and the Brahmasutras, and construed the individual soul as an attribute of the supreme Soul but distinct from it. The latter dwells in the individual heart and can therefore be an object of devotion. Ramanuja follows closely the tenets of the Bhagavad-Gita in describing the mode of salvation, but his *bhakti* is not so much an unbounded love as a continuous meditation or *Upasana* prescribed in the Upanishads. Both in his philosophy and general practices, Ramanuja follows the orthodox Brahminism. His sect, known as Sri-Vaishnavas or Sri-Sampradaya, has nothing to do with Gopala-Krishna, i. e. Krishna as a cowherd boy. On the other hand, he recognizes Sri (Lakshmi), Bhu (earth) and Lila (sport) as the consorts of Vishnu.

2. Paancharaatra System.

Ramanuja followed more or less Vasudevism of the old Pancharatra system, recognizing Vasudeva with his four *vyuhas*, and his identity with Vishnu and Narayana.

The most important development of the system is the

growth of *Pancharatra Samhitas* which give a complete exposition of the faiths, beliefs and practices of Vaishnavism. The traditional number of these Samhitas is 108, but nearly double that number of texts are named. Their date is uncertain, but may be placed between 600 and 800 A. D. They show a considerable influence of the Tantrika element and lay stress on the Sakti of Vishnu. Otherwise, they show a normal development of the teaching formulated in the Narayaniya, section of the Mahabharata.

But Madhava ignored Vasudeva and his *vyuhas* and referred to the Supreme Spirit mostly as Vishnu. Thus, a general Vaishnavism took the place of the old Bhagavata school.

The philosophy of Ramanuja was further developed by Madhva or Anandatirtha (13th cent. A. D.) (Vide infra) the founder of another sect. He conceived God as altogether distinct from the individual spirit. He travelled all over India, fighting the philosophical doctrines of Sankara and establishing the Vaishnava creed on a definite philosophical basis. Madhva's activities were chiefly confined to the western or Malabar coast.

3. Radhakrishna cult.

The southern Vaishnavism laid little stress on the cowherd element of Krishna and altogether ignored Radha. Far different however, was the case with Vaishnavism in Northern India which was first put on a philosophical basis by Nimbarka who flourished after Ramanuja, probably in the twelfth century A. D. (Vide infra) His philosophy is a compromise between those of Ramanuja and Madhva; as he believes God to be both indential and distinct from the individual spirit. But his chief difference from his predecessor Ramanuja lies in substituting the old and pure *bhakti*

(devotion) for *upasana* (meditation), and giving prominence to the elements of Krishna and Radha. A further progress of the Radha cult is found in Jayadeva's *Gita Govinda*, where Radha is the mistress and not the wife of Krishna.

The cult was carried to its extreme form by a Telugu Brahmin named Vallabha Charya whose activity falls in the first half of the sixteenth century A. D. (Vide infra). His Vaishnavism centres round Krishna; the beloved of the Gopis, and his eternal consort Radha. Elaborate rituals for the worship of Krishna and religious feasts and festivals were fully developed all marked by a spirit of sportive enjoyment.

engā was saved from this degraded form of Vaishnavism by the famous Chaitanya or Sri-Gauranga (1485-1533) A. D. (Vide infra) a contemporary of Vallabha. The elements of Radha and Krishna had taken deep root in its soil, as the songs of Jayadeva (12th cent. A. D.) clearly show. But the merit of Chaitanya lies in the fact that he elevated the passions of the couple to a high spiritual plane and stressed the emotional at the cost of the ceremonial side of religion. His piety, devotion and fervour introduced a pure and spiritual element in Vaishnavism which offers a bright and refreshing contrast to that promulgated by Vallabha.

In the Maharashtra country Radha was replaced by Rukmini, the lawful wife of Krishna, who plays all along a subordinate role to her husband. The great preachers of this sect were Namdev (end of the 14th century A. D.) (Vide infra) and Tukaram (17th cen. Vide infra) the founders of the popular form of Vaishnavism in the Maratha country. Ramananda (14 cent. Vide infra) replaced Krishna and Radha by Rama and Sita. This was further developed by his famous disciples, the chief among whom were Kabir

(15th cent. A. D. Vide infra) and Tulasidas (1532-1623 A. D. Vide infra).

The religion propounded by them was more chaste and pure. The simple, beautiful verses of Namdev, Tukaram, and the disciples of Ramananda are full of piety and they acquired wide celebrity far beyond sectarian limits.

In addition to the high spiritual level based on secure foundations of morality; these Vaishnava teachers together with Chaitanya have made other notable contributions to the culture of the mediaeval age and they may be summed up as 1. preaching in vernacular, which thereby got a great impetus; 2. ignoring the caste distinctions and admitting even the the lowest castes to their fold; and 3. definitely rejecting rites and ceremonials as useless and laying stress on the morality and purity of the heart. Excepting Ramananda and Chaitanya, the others carried this last feature to an extreme form by discarding altogether the worship of images.

It is interesting to recall that, of the chief disciples of Ramananda, who founded different schools, Kavir is said to have been a Muhammadan weaver, Dadu was a cotton-cleaner and Rohidas was a leather worker. People of all classes and castes, including Muhammadans, were taken into these sects and thus began that levelling process, the completion of which is still the aim and, alas the despair of modern reformers.

Nimbaarka.

Nimbaarka also protested against Sankara's doctrine like Raamaanuja. He was born at Nimbapur in Bellary District. He died in 1162 A. D. His father, was a

* Cf, Mediaeval India Page 636.

Telugu Brahmin and a Bhaagavata The doctrine of *Nimbaarka* is both monistic and pluralistic (Dwaitaadwaita). The inanimate world and the individual soul and God are distinct from one another as well as identical. Brahman is the material as well as the efficient cause of the world. It is in the doctrine of Nimbarka that Krishna, the cowherd, comes into prominence as the supreme Lord of the Universe. The way to eternal beatitude is Bhakti for the lotus-like feet of Krishna, and that Bhakti is only to be obtained through grace. Thus we find that in Nimbarka's system for the first time the elements of sport in Vaishnavism comes to the surface and retains its place ever afterwards. (Bhandarkar, Vaisnavism, p. 66.) Bhandarkar calls it the fourth element). The followers of the school of Nimbarka are fairly numerous around Mathura in the United Provinces of Agra and Oudh.

The difference between Raamaanuja and Nimbaarka is that while the former confined himself to Naaraayana and his consorts Lakshmi, Bhu and *Lila*, the latter gave an exclusive prominence to Krishna and his mistress Radha, attended by thousands of her female companions. (Bhandarkar, Vaisnavism, p. p. 65-66.)

Madhva Charya. *

About 1200 A. D. was born another great teacher whose name was Madhva at Kallyanpur in the Udpi district of South Kanara, about 40 miles west of Sringeri. At an early age, Madhva renounced the world and adopted the life of a wandering monk. When he began his work, the atmosphere of the country was surcharged with the spirit of debate, and the young monk found himself amidst warring exponents of rival doctrines. Years of strenuous toil

* Cf. Page 637 Mediaeval India.

were devoted to study and discussion, and when the task of preparation was finished, Madhva started on a teaching tour during which he defeated several of his leading opponents. He visited the north, and at Hardwara, when he returned from the meditation in the Himalayas, he proclaimed the Supreme God-Head of Vishnu and published his commentary upon the Vedanta Sstras. The final aim of man is the direct perception of Hari, which leads to moksha or eternal bliss. According to Madhva also, knowledge leads to *bhakti*, and final stage in a man's spiritual evolution is direct and steady remembrance of a Saguna Isvara, which is identical with *bhakti*. Madhva divided souls into three classes :—1. those destined to enjoy heavenly bliss, 2. those eternally destined to rebirth and death, and 3. those doomed to everlasting hell. Release from transmigration can only be obtained by means of knowledge and devotion.

Ramaanand. *

Ramanand, who flourished in the 14th Century, tried to do away with caste distinction. Having gone through the usual course of education, he became a disciple of Raghavendra of the Visistadvaita school. He went about visiting holy places, demolishing the doctrine of *maya* (illusion), and establishing the worship of Rama and Sita. He was the first to employ the vernacular language for the propagation of his doctrines. He rejected caste and admitted to his discipleship men of all classes without any distinction. Ramanand's followers are numerous in the Gangetic plain. They worship Vishnu under the form of Ramachandra with his consort Sita, and their favourite work is the Bhaktamala of Nabhaji. Of all the disciples of Ramananda, Kabir was the most famous.

* Cf. page 638 Mediaeval India.

Vallabhacharya. §

Vallabhacharya was the son of Lakshmana Bhatta a Telugu Brahmin. He was born in the year 1479. From his early boyhood, he showed signs of genius and came to be looked upon by his contemporaries as a prodigy of learning. Having finished his education, he started on his travels and reached the court of Krishna Deve Raya, king of Vijayanagar where he defeated the Saivas in a public discussion. He visited Mathura, Brindavan, and many other places, and finally settled in Benares, where he composed seventeen works among which is his *Bhagavat Tika Subodhini*. In the tenth book of this work is contained an authoritative exposition of the chief doctrines of the sect. Vallabha taught *Suddhaadvaita* or pure monism. Like Sankara, he does not brush aside the individual soul or the inanimate world as illusion, but maintains on the other hand that *maya* or illusion consists in establishing a relation between self and not-self. According to him there is no distinction between the Brahman and the individual soul and the inanimate world is a manifestation of it. Bondage of the individual soul is due to delusion, which can be got rid of only by having recourse to the various ways of *Bhakti*. The path of devotion preached by Vallabhacharya is called the *Pustimarga* wrongly translated by some European scholars as "the way of pleasure". It really means the path of acquiring the grace of the Almighty. It is by loving God with a full knowledge of his greatness but without any desire that grace is acquired. Non-attachment to worldly pleasures and self-renunciation form in reality the keynote of his teachings. In one of his works he writes: "the home, the centre of all worldly desire, should be renounced in every

§ Cf. page 639 Mediaeval India.

way. If it becomes impracticable, one should dedicate it to the service of God, for it is He alone, who can emancipate man from evil". Again he writes that realisation of God is impossible in those whose bodies are swayed by passions. But as time passed the true spirit of Vallabhacharya's doctrines was forgotten and his successors laid stress upon the sports of Krishna's childhood and taught that a God possessed of such human qualities should be worshipped not by fasting and prayer but by sanctifying all human pleasures in His service'. According to the pure Vaisnava faith Krishna's love for the gopis is to be explained allegorically but the followers of Vallabhacharya interpreted it in a material sense.

The cult of Vallabhacharya became, in its degenerate form, as Monier Williams writes, the Epicureanism of the East. Its followers began to aim at securing the ends of religion not by means of self-denial and self mortification, but by the indulgence of appetites. Hence the system has lent itself to great abuse, and even the pontiffs of the sect have earned a notoriety by reason of their habitual pursuit of pleasure. The followers of the sect consist of the wealthy trading classes of Gujarat, Rajputana, and the country round Mathura, who are taught that all their belongings should be dedicated to the guru, and this doctrine is not seldom carried to the extreme. Dr. Bhandarkar rightly observes:-"The spirit of this system, therefore, seems to be sportive enjoyments and it cannot but be expected to influence the ordinary life of its followers. The undesirable practices of the sect afterwards led to the puritanical movement of Swami Narayana in the 19th Century.

Chaitanya *

A contemporary of Vallabhacharya was the celebrated

* See Page 190 Supra.

Bengali reformer, Saint Chaitanya, who was born in 1485. At the age of 25 Chaitanya renounced the world and became a Sannyasin and for six years wandered about the country, preaching the doctrine of love and converting the exponents of Advaita doctrine to his system. After these wanderings, he returned to Puri where he spent the remaining sixteen years of his life. Chaitanya denounced caste, proclaimed the universal brotherhood of man, the inefficiency of mere Karma of ceremonial rites and that the worship of Hari and the singing of his name are the only effectual means of salvation.

Love and sport are the distinctive characteristics of this system. The Highest God is Sri Krishna, who is so beautiful that even the God of love falls in love with him. His eternal sports are carried on in Gokula. The Vedantic theory of Chaitanya is the same as that of Nimbarka, viz., *Bhedaaheda*, or identity as well as difference. The individual soul can attain to Krishna, the supreme Lord, by *Bhakti* alone. As the bee is distinct from the honey and hovers about it and, when it drinks it is full of it, i. e. is one with it, so the individual soul is at first distinct from the supreme soul, seeks the supreme soul consistently and continuously and when through love he is full of the supreme soul, he becomes unconscious of his individual existence and becomes, as it were absorbed in him".

The highest stage which the individual soul can attain is to indulge in eternal sports with his Lord in the relation of a lover and his beloved Radha is nothing but the individual soul immersed in an ocean of rapturous love for the great Lord. She is thus, nothing but idealised love. To love Krishna eternally as a servant, as a friend, as a son, and lastly as a lover is the highest goal of man and not *Mukti*. Thus we find the system of Chaitanya aims at the culture

of emotions in the individual soul and not of intelligence. (For Chaitanya's exposition of Bhakti see "Chaitanya-Charitaamrita", p. p. 232-43 J. N. Sarkar's translation). Minute shades of emotions are distinguished and the works of the Chaitanya school of Bhakti are sometimes a psychology of the fine emotions.

Love was so great a passion with him that the thought of Krishna playing upon his flute, of the wild woods of Vrindaban and the cows grazing in the verdant meadows, of the milk-maids bathing at the *Ghats* of the Jamna throw him into an ecstasy. Love is the watchword of the Chaitanya cult.

"Every man must offer body and soul to Him, and must disdain his personal gratifications. He must be prepared to carry out his Lord's will and in doing so must not shrink from any sacrifice. He will worship his image, he must talk of him, he must wreath flowers for him, he must burn incense and wave the *Chamara* in his temple and offer his services day and night to the Lord and to the world as well. Vaisnavism, it must be repeated, is not the religion of the recluse, nor is it a non-proselytising creed."

His heart was full of sympathy for suffering humanity, and often he burst out in bitter anguish; "My heart breaks to see the sorrow of mankind. Lay thou their sins upon my head; let me suffer in hell for all their sins so that thou mayest remove the earthly pangs of all other beings". Such was the gospel of love which Chaitanya preached to the high and the low, to the Brahman and the Sudra. The followers of Chaitanya are numerous in Bengal and Orissa, and his name is still chanted in many a home in joyous gatherings at eventide with a fervour and devotion which is almost mediaeval in its depth and intensity.

Naamadeva.

(1270-1350. A. D.

Naamadeva was a Maharaata Saint, a man of low origin whose probable date of birth must be fixed in the latter part of the 13th Century. Namadeva preached the unity of God. deprecated idol worship and all outward observances. His powerful faith in God reveals itself in his hymns.

Kabir.

1398. A. D.

Kabir was the greatest disciple of Raamaananda. He was born about 1398. His origin is shrouded in mystery. Tradition says, he was born of a Brahmin widow who cast him off near a tank in order to escape social odium. The child was picked up by a weaver Niru, and was brought up by his wife with great affection and care. When he grew up, he took up his father's trade, but found time to moralise and philosophise.

"No one knew the mystery of that weaver

Who came into the world and spread the warp

The earth and the sky are two beams,

The son and moon are two filled shuttles,

Taking a thousand threads he spreads them lenth-ways;

Today he weaveth still, but hard to reach is the far-off end."

He seeks freedom from transmigration and helps to attain the true path by means of Bhakti. He has an aversion for the theological subtleties, and condemns all sham insincerity, and hypocrisy, which are mistaken for true piety. He makes no distinction between the Hindu and the Turk, who he says, are pots of the same clay, and who are striving by

different routes to reach the same goal. He pointed out the futility of mere lip-homage to the great ideals of truth and religion. Of what avail is the worship of stone and bathing in the Ganges, if the heart is not pure? Of what avail is a pilgrimage to Mecca, if the pilgrim marches towards the Kaaba with a deceitful and impure heart?

"It is not by fasting and repeating prayers and the creed,
That one goeth to heaven;

The inner veil of the temple of Mecca

Is in man's heart; if the truth be known

Make thy mind thy Kaaba, thy body its enclosing
temple,

Conscience its prime teacher;

Sacrifice, wrath, doubt, and malice;

Make patience thine utterance of the five prayers,

The Hindus and the Musalmans have the same Lord",

Nanak the founder of the Sikh religion was a disciple of Kabir. He was born in 1469 A. D. (See Page 168 Supra).

Suradas.

Suradas is the great poet of the literature dedicated to Krishna, as Tulsidas is of the literature of Rama. He belongs to the first half of the sixteenth century; his date is fixed by some as between 1483 and 1563 A. D. He was blind from his very birth.

The Yogi Panth.

The Yogi Panth (Yogi sect) also inspired many of its members to the composition of songs and lyrics. The influence of the songs of Gopichandra of Bengal can be observed all over India. It is chiefly the Mohammedans, who compose and sing these songs, and are known in the north-west of India as Bbhartharis or Bhatriharis. Though Mohammedans

they wear the ochre robe of Hindu ascetics and their presence is indispensable to many Hindu ceremonies.

Ravidas, Jhali, Mira Bai.

Ravidas was a cobbler by birth, but his religious life was as exalted and pure as it was deep. It is said that Jhali, the queen of Chitore, received her initiation into religious life from him, and Mira Bai also completed her spiritual discipleship under his guidance.

Tulsidas.

Tulsidas, though born long after Kavir, was inspired by the spiritual life of Ramananda. He composed the great Ramayana in Hindi verse, which has been and still is the one spiritual support of a large number of devotees throughout North India, and even in some parts of the South. He was born in 1532 A. D. in a Brahmin family of the Banda district. His other work, the *Vinaya patrika*, is a rare book of prayers uttered from the depths of a heart filled with devotion. He does not belong to the group Kavir, Dadu and other free spirits of the middle ages, because he did not reject the caste-system and the other social and religious conventions of the time; but his high poetic vision and deep devotion won for him many admirers from among the liberal-minded Mohammedans of his time. The famous poet, Abdar Rahim Khan Khana whose liberality of mind and sense of literary appreciation were unparalled, and who was also a minister of Akbar, was one of his disciples.

(5)

Literature in Mediaeval India.

It would be wrong to suppose that the Muslims were mere savage conquerors, and that Indian intellect remained

in a state of torpor from 1200 A. D. Some of the Muslim kings took great interest in literature. The prince of poets was Amir Khusrau, the parrot of Hind, whose many works testify to the boundless fertility of his muse.

Amir Khusrau.

Besides being a great poet Khusrau was a master-musician well-versed in the technicalities of the art, as illustrated by his discussions with Gopal Nayak, the renowned Hindu singer of the 14th century. Khusrau's contemporary, Mir Hasan Dehlvi was a poet of considerable eminence. He is described by Abdul Aaq Dehlvi as "musical and most pleasing". The poet entered the service of Prince Muhammad at Lahore and remained for five years at his court. When the prince died fighting against the Mongols, he wrote a lament in prose over his death which is reproduced in Badaoni's pages. Subsequently the poet adorned the court of Muhammad Tughluq, who was one of the most accomplished princes of the time. He composed a Diwan, and wrote the memoirs of his patron saint, Shaikh Nizam-ud-din Aulia which he completed in 720 A. H. After writing poetry for fifty years, he died at Daulatabad in 727-28.

Badru-ud-din.

Another poet who acquired much celebrity in his age was Badru-ud-din, more familiarly known as Bad-r-Chach from his native city of Chach or Takhand. He attended the court of Muhammad Tughluq and composed odes in his praise. His poetry is difficult, full of conceits and puns, and loaded with imagery.

Historical Prose.

Among writers of historical prose, the most distinguished are Minhaj-us-Siraj, Zia-ud-din Birani Siraj Afif,

Ain-ul-mulk Multani and Ghulam Yahya bin Ahmad, the author of the *Tarikh-i-Mubarak Shahi*. Minhaj-us-Siraj, the author of the *Tabqat-i-Nasiri*, is not, as Abdul Haq Dehlvi suggests, a master of the art of pure and elegant writing, but his style is characterised by a certain brevity, boldness, and vigour which we miss in other writers of the time. Zia Barani is a prolix writer of highly embellished prose. According to his own statement he composed his *Tarikh-i-Firuz Shahi* with great labour and to make it a compendium of all kinds of useful knowledge. Barani enjoyed the patronage of Muhammad Taughluq and Firuz Taughluq but he died poor and forlorn in the early part of Firuz's reign. Shams-i-Siraj who continued Barani's *Tarikh-i-Firuz Shahi* is more methodical and careful in his treatment of the subject than his predecessor. But like all oriental writings his work is full of the eulogies of his patron, unnecessary repetitions, and exuberances of eloquence which were doubtless the stock-in-trade of literary men in his day.

Among the literati of Muhammad Taughluq's court was Maulana Muaiyyan-ud-din Umrani the author of the commentaries on the *Husaini*, *Talkhis* and *Miftah*. The Sultan sent him to Shiraj with an invitation to Qazi Abdul Mullat-wa-ud-din Alichhi in order to request him to write a work dedicated to his royal patron. But when the ruler of the country came to know of his mission, he dissuaded the Qazi from going to India. Besides the Maulana, there were other poets, logicians, philosophers, and physicians at court with whom the Sultan used to hold discussions. During the reign of Firuz, Maulana Khwajagi, Ahmad Thanesari and Qazi Abdul Muqtadir Shanihi are mentioned as the most distinguished literary men of the time. The Qazi was a man of vast knowledge. He composed poetry in Persian and Arabic and his Arabic verses

are superior even to his Persian productions. The Akhbari-ul-Akhyar is a testimony to the genius of Ahmad Thanesari. Ain-ul-Mulk Multani, who held important offices in the state under Alauddin, Muhammad Tughluq and Piruz Tughluq, was one of the shining lights of the literary firmament. Shams-i-Siraj Afif writes of him: "Ain-ul-mulk was a clever and accomplished man and of the highest ability. He wrote some excellent books during the reigns of Muhammad Tughluq and Firuz Tughluq. One of them is the Ain-ul-Mulk, a popular and approved work". One of his works which has come down to us is the Munshat-i-Mahru also called "Insha-i-Mahru" which is a collection of letters and despatches, which are models of official correspondence. They give much valuable information regarding the political, social, and religious condition of Hindustan during his time. Yahya, the author of the Tarikh-i-Mubarak Shahi, is a writer of simple and elegant prose, whose meaning is never obscured by flights of fancy. His history is valuable for the period during which the author lived and in many respects correct and supplements Minhaj, Barani and Afif. A great deal of literature was produced under the provincial dynasties. Jaunpur was a well-known seat of learning. Ibrahim attracted to his court men of letters by means of his liberal bounty. Qazi Shihab-ud-din Daulatabadi was a famous writer who wrote the Hawash-Kafiah, Irshad, and Bad-ul-Bayan. Maulana Shaikh Illahabad of Jaunpur wrote expositions of the Hedaya.

Philosophical literature.

Philosophical literature was not wanting and Mughis Hasnavi's discourses on metaphysical and practical subjects are not unknown to students of eastern literature. Other famous writers of the time were Zahir Dehlvi on whom the

title of Zahir was conferred by Sikandar Lodi, Maulana Hasan Nashqi, Manlana Ali Ahmad Nishani and Nurul Haq.

Influence of Sanskrit.

The Muslim scholars were not altogether devoid of a knowledge of Sanskrit. Mention has already been made of the influence of Sanskrit upon Arab culture. The Arabs had learnt much from Hindu medicine, philosophy, and astronomy, and during the Caliphate of Al-Mamun, the Augustan age of Arabian literature, Arab scholars cultivated a knowledge of Sanskrit as is evidenced by Muhammad bin Musa's treatise on Algebra and the medical treatises of Mikah and Ibn Dehan. Ali Biruni, who came to Hindustan in the train of Muhammad of Ghazni, acquired a knowledge of Sanskrit and translated Sanskrit works into Arabic. In the fourteenth century when Firuz Taghluq captured the fort of Nagarkot, he seized a Sanskrit library which contained valuable works. He ordered Maulana-iz-ud-din Khalid Khani to translate a work on philosophy, divination, and omens into Persian and entitled it Dalayal-i-Firuz-Shahi.

Medical Literature under Muslim Influence.

During the reign of Sikandar Lodi a medical treatise was translated from Sanskrit into Persian.

The physicians of Khorasan and Hind were brought together and they compiled a new treatise after consulting numerous works on medicine. The book so compiled received the name of Tibbi-Sikandari.

Hindu Literature. *

It is impossible to attempt here a complete account

* (Farquhar. An outline of the Religious Literature of India pp. 220-21).

of the vast literature, secular and religious that was produced by the Hindus during the early middle ages. The virility and vigour of the Hindu mind was not extinguished by Muslim conquest, and though state patronage was denied to Hindu literature in northern India it continued to flourish in centres away from Muslim influence. There was an abundant outcrop of religious and philosophical literature. In the eleventh century, Raamaanuja wrote his commentaries on the Brahma Sutras in which he expounded his doctrine of Bhakti which was, according to him only a mode of *Jnana*. Parthasarathi Misra wrote a number of works on the Karma Mimamsa about 1300 A. D. of which the Sastra Dipika was the most widely studied. Several works were written during this period to expound the doctrines of Yoga, Vaiseshika, and Nyaya systems of philosophy. Nyaya was assiduously cultivated by Vikramasila and by the Jains who produced several works. The greatest Jain logician was Deva Suri who flourished the twelfth century. The Sanskrit grammarian Hemachandra was a Jain and the two northern recensions of the Panchatantra bear the impress of Jain influence.

Jayadeva's Geeta Govinda.

The leaders of the Bhakti movement made valuable contributions to philosophical literature, and their works were widely studied by their followers. Lyrical poetry was also written, and an excellent specimen of it is Jayadeva's Gita Govinda which was probably written in the twelfth century A. D. It describes the love of Krishna and Radha, their estrangement and final union, and the sports of Krishna with the milkmaids of Vraja. The beauty, sweetness, cadence of words and the wealth of emotions are all worthy of praise. Jayadeva has treated his theme with wonderful skill and attained great perfection of form by combining grace of

diction with ease in handing the most intricate metres. Keith's praise of him is equally warm.

Rupa Goswami.

The *Vidagdha Madhava* and the *Lalita Madhava* were composed by Rupa Goswami, minister of Hussain Shah about 1532 A. D. The dramas of Rupa reveal poetical powers of a high order and in the words of Dr. Dinesh Chandra Sen they "prove that religion and faith are no bitter deeds for deceased souls, and that asceticism is not to be always associated with skeleton forms tortured by self-denial and austerities." Jiva Goswami was also a prolific writer. He wrote as many as 25 works in Sanskrit all distinguished by uncommon learning and power of assimilation.

Dharma Sastras.

Regarding Dharma Sastras it may be said that some of our best commentaries were written during this period. Vijnaanesvara wrote the *Mitaakshara*, his famous commentary on *Yajñavalkya*, according to Macdonnel in 1100 A. D. In the first quarter of the *Daayabhaaga*, which forms the basis of the modern law of inheritance and partition in Bengal. From the thirteenth century to the fifteenth Smṛiti literature "flourished in Mithila so luxuriantly that the writers came to be regarded as forming a separate school". A number of writers arose, the most famous of whom are Padam Dutta Bhatta, *Vidyāpati Upādhyāya* and *Vaachaspati Misra*, who flourished in the second half of the fifteenth century. Astronomy was not neglected, and the last great Indian astronomer *Bhaaskaraachaarya* was born in 1114 A. D. Mithila fortunately escaped the ravages which invariably followed the Muslim conquests. The Bengal scholars wrote on *Nyaaya*, *Smṛiti*, *Bhṛtidarsana*. *Raghu-*

nanden Misra's work on Smṛiti is too well-known to need any mention.

Saayana and Maadhavaachaarya.

Nowhere was literary activity more manifest than in the South which never came under direct Muslim influence. The Hindu dynasties encouraged learning, and the cause of culture received a great impetus under the Vijayanagar kings. It is stated in one of the inscriptions that the Vijayanagar Prince Maroppa with his minister Maadhava compiled the Sivaa-gama Sootra Sayana, the famous commentator on the Vedas, served as minister in the time of Hari Hara II, and his brother Maadhava adorned the same office under Bukka. He is the author of the famous work, *Sarvadarshana Sangraha*. The princes of the Saluva dynasty patronised letters and Krishna Deva Raya was a liberal patron of Sanskrit and Telugu literature. The numerous inscriptions show that a knowledge of Sanskrit was widely diffused and court poets and writers were pastmasters in drafting official documents.

Jain writers.

The Jain writers of the Digambara school wrote their works in the language current among the people, and this gave a literary shape to the Kanarese and Tamil languages. The activities of the Svetaambara Jains up to the eleventh century were confined to the systematisation and exposition of their canonical works. But the period after the eleventh century is remarkable for the production of independent philosophical and poetical works. Among the writers of the period the most famous is Hemachandra. An elaborate Aayurvedic work, *Khagendra Mani Darpanam* in Kanarese was written by a Jain author.

Influence of Bhakti movement.

A great impetus was given to the Hindu literature by

the growth of the Bhakti movement in Northern India. Some of the leaders of this cult wrote in Hindi and composed some of the finest devotional hymns that exist in the world's religious literature.

(6)

United and Prosperous India.

Synthesis of Hinduism.

The successive waves of invaders and immigrants to Hindustan such as Greeks, Huns, Scythians, Bahlikaas, Saakaas and Guptaas were silently absorbed into the Hindu fold. They found their place in one of the Chaatur Varnaas. The caste distinctions were not so rigid as they are now and the castes were accepted as an economic and social organisation intended for the benefit of the community. People lived securely under the protection of the Kshatriyas who deemed it a sacred duty to guard the person and property of the people.

But, when the heterogeneous population of Hindustan with well-marked social, religious and ethnological differences had to face a beeligerent power organised on a military basis and bound by strong ties of religious brotherhood of Islam, the new order replaced the old. The numerous Rajput princes, hopelessly blinded by petty jealousies failed to visualise the future that lay in store for them. Even the repeated raids of Mahammad of Gazni and the untold losses of wealth did not force the Rajput princes into a solid union for the defence of their homes.

A great many of them perhaps felt consciously or unconsciously that the Mussalmans would be absorbed into

the society in the same manner as the past invaders of Hindustan. But the Muslim conquerors refused to be so absorbed. In fact, it happened the other way. Many Rajput princes became enamoured of the splendour of the Moghal Durbar and coveted matrimonial alliances with the Mohammandans and became easy converts to Islam, although some patriotic Rajaputs like the Raana of Chittoor, fought to death and covered themselves with ever lasting glory.

Imperial Unity.

The Islamic conquest however did not prove an unmixed evil. It established Imperial Unity in the place of the system of hostile states and taught the people to respect a single authority in the country. It added a new element of youthful vigour to our national stock and introduced a new culture which deserves to be appreciated. The Muslim manners and customs leavened the habits of the upper class Hindus and much of the polish and refinement that we find in modern society is due to them. The Muslims introduced a new language into the country with a wonderful literature of its own, and by constructing noble edifices, the Muslims brought about the renaissance of the Indian Art. The Jain temple at Abu finished in 1332 A. D. acted as a source of inspiration to the master craftsman.

Administration.

It would be equally wrong to suppose that the Muslim rulers were mere savages who knew nothing of the art of civilised administration.

Originality was not wanting in the Muslims. Some of them took the bold step of attempting to secularise the state by severing priestly functions from political duties, although the attempt did not succeed. They emphasised the impor-

tance of raising the crown above all parties and functions and subordinating the claims of orthodoxy to the interests of the state. But the times in which they lived did not favour the consummation of such an ideal. But, even then they succeeded partially in their attempt. The process must be gradual and slow. A period of one or two centuries is nothing in the long history of Hindustan. Islam and Christianity are only some of the *Panths* or ways for attaining salvation like Vaishnavism. The combined genius of the Hindus, the Muslims and Christians who live here will surly find a solution to the perplexing problem that besets us to day namely, the problem of a *United Nation* with common hopes and aspirations. After all, they are children of one mother singing the common song ".....Hindustan Hamara".

Economic Condition.

During the Muslim rule, there was no economic drain however profligate or extravagant a ruler might be. The Mahammadans spent the treasures of the state in the country itself. The vast wealth of Hindu India passed into Muslim hands, but the fact that the Muslims had made India their permanent home had a profound effect on the economic situation. However depressing the political atmosphere may have been at times, and however acute may have been the distress in times of famine, there was no dearth in normal times, of articles of food, which are vitally necessary to a healthy and vigorous existence of the nation a fact which was brought home to us by the rapid deterioration of the physique of our people in modern times. Further away from the great cities, which became the centres of Muslim power, life in the country was not very much disturbed by the conquest.

Hindu Genius.

Though the Hindus lost their political power, the culture of the race kept up its uninterrupted flow as is shown by the many intellectual and religious movements, which were organised by men, who were great alike in the realm of thought and action. (Local Government in Ancient India P. 12.) Excluded from the secular sphere of the state, the Hindu genius found an outlet in religion, and the new school of reformers tried to purify a system which was encrusted with superstitious rites and practices, so completely at variance with the true spirit of Hindu religion. The names of Raamananda, Kabir, Chaitanya, Naanak and Tulsidas will stand for all time to come as beacon lights to guide humanity which is only too prone to fall into error and superstition. The very fact that the Hindu society was able to produce such great men furnishes a refutation of the theory that the Hindu genius had become decadent and sterile under Muslim rule. On the contrary, it proves the virility and vigour of the Hindu mind.

Valour of the Hindus.

Although Hindustan was subjected to Muslim rule for various reasons as already indicated, the valour of the Hindus did not die out. From time to time, they exhibited great courage and skill and established immortal fame for themselves. When a huge army of Greek soldiers was threatening an invasion of Hindustan from the North, young Chandragupta collected a band of heroic men and drove them away. Sellucus the great general of Alexander had to seek peace by offering his daughter in marriage to him. (B. C. 303). Yet Chandragupta was a Jain bound by principles of Ahimsa.

Vikramarka, at the commencement of the 6th century,

saved the country from the invasion of the Sakaas and Sri Harsha (606-646) drove away the White Huns and established his Empire from the Himalayas to the Narmada and extending to the Eastern and Western seas. In the twelfth Century Prithviraj, the King of Delhi had established a great reputation for chivalry and heroic exploits and marched against the Ghori chief, at the head of a large army and scattered the Muslim army with tremendous vigour. But for the treachery of Jayachandra of Kanauj his father-in-law, the history of Hindustan would have been different.

In the 16th century, young Krishna Devaraya of Vizianagaram stemmed the tide of Muslim expansion into the south and protected national institutions and culture by lavishly patronising them. And lastly the Maharattas, Sikhs and Rajputs defended the country against foreigners until at last they were overpowered by internal dissensions and intrigues. However we have every reason to be proud of the glorious history of our past,

Conclusion.

During the Bhakthi Yuga the Hindu and Muslim cultures reacted upon each other in such a manner that both the cultures received a polish by their contact. Economically, Hindustan did not suffer inspite of Muslim rule; on the other enriched and achieved such an international reputation that it came to be called the "Pagoda Tree", so that European nations were attracted to carry on trade with it by the general prosperity and peace that the country enjoyed. Politically, imperial unity was achieved. Some new methods of administration were introduced by the Moghuls and the Maharaata rulers which even to-day are followed in certain of the departments. The political consolidation effected under the Muslims did not however suppress the spirit or the valour

of the Hindus, for the latter once again re-established themselves and maintained their superiority by the expansion of the Maharaata Empire over nearly the whole of India, reducing the rule of Moghul Emperors of Delhi to a mere nominal sovereignty. But for the treachery and diplomacy of the foreigners assisted by the downfall of the Braahmana and the Kshattriya from the ideals of Swadharma which brought about disruption in the whole social structure of the country, the mighty confederacy of the Maharaata States constituting the Maharaata Empire would have kept up their independence and would have absorbed the Islamic races into their own elaborate structure as was done with many other races had been entering Hindustan from time immemorial.

The effects of Bhakti Movement are summarised by M. G. Ranade, Judge, High Court, Bombay, in his "Rise of Mahaaraashtra Power," 1900. In the Bhakti Yuga, numerous saints of Hindustaan preached a faith, which was at once tolerant and catholic, deeply spiritual and yet not iconoclastic.

(1) The movement gave us a literature of considerable value in the vernaculars of the country.

(2) It modified the strictness of the old spirit of caste exclusiveness. It raised the Soodra classes to a position of spiritual power and social importance, almost equal to that of the Braahmanas.

(3) It gave sanctity to the family relations and raised the status of women.

(4) It made the nation more humane, at the same time more prone to hold together by mutual toleration.

(5) It suggested and partly carried out a plan of reconciliation with the Mahamadans.

(6) It subordinated the importance of rites and ceremonies and of pilgrimages and fasts to the higher excellence of worship by means of love and faith. It checked the excesses of polytheism.

(7) It tended in all these ways to raise the nation generally to a higher level of capacity both of thought and action. It prepared the Maharaatas in particular to take the lead in re-establishing a united Hindu power in the place of foreign domination.

These appear to be the principal features of the religion of *Maharashtra*, which Saint *Raamadas*, the guru of *Sivaaji*, had in view when he said, "*Propagate the Dharma of Mahaarashtra*".

(7)

Aayurveda in Bhakti Yuga

The influence of Saanskrit began to grow less, as that of the Provincial languages increased. The Provincial languages were enriched by translation from Saanskrit. Much of the literature was in poetry. The physicians depended more upon family traditions and they recorded their experiences in manuscript books in prose handed down from generation to generation.

There are evidences of the physicians drawing from new sources of information and adding to their literature. Gurukulaas and Tols continued to teach Aayurveda as a special subject and the fudatory states patronised them.

Rich people had large quantities of valuable medicines prepared and stocked for sale as well as for distribution among the poor. The physicians used to get a share in them for their own use.

Ardham Siddha Rasasya Taila Ghrutayor Lehasya
Bhaagoshtamah.

Samsiddhaa khila Loha Choorna Vatikaadeenaam tadhaa
Saptamah.

Yogeeyeta Bhishagvaraaya Gadibhir Nirdisya Dhan-
vantarim,

Sarvaarogya Sukhaaptaye Nigadito Bhaagassa Dhan-
vantare. (Rasaratna Sumauchhayam. Chapt. 8.)

The physician is entitled to get in return for his expert services as follows:—

“Half the share of the prepared medicines in the case of mercurial preparations:

One eighth share of the stock of prepared medicines in the case of Oils, Grithams, (Medicated ghees) and Lehyams:

One seventh share of the stock of prepared medicines in the case of all other metallic articles or Bhasmaas, Powders and Pills”.

“When the medicines are prepared for a merchant and intended for trade, the physician is entitled only to get a share of 9 per cent on the purchase of drugs and a share of another 9 per cent on the stock of prepared medicines. The physician is prohibited from taking more than this share and is also enjoined to distribute his share free to the needy”.

The study of the pulse was a special characteristic of this period. Many books appeared on this subject during this period. Rasa Saastra was first developed as a secret

science among the Siddhaas; although ultimately it became a branch of Aayurveda, when valuable books on Rasatantra, such as Rasaratnaakara, Rasaratna Samuchhaya, and Rasaarnava were published. Mercury and Gold were first used in India in the treatment of Syphilis and they continue to be the favourite medicines of the Hindu physicians of to-day.

Camphor and Madhusnuhi, largely imported from China were included in Aayurvedic Pharmacopoeia. Opium, Ganja and several other foreign drugs were introduced into the Hindu Pharmacopoeia. Bhaavaprakasha; Saarangadhara, Yogaratanakara, Basavarajceyam, Chintamani, Nighantus and such other books were published in Sanskrit with commentaries in provincial languages, as hand books for the practitioners of Aayurveda. Chikitchaasaaram, a manual of medical treatment was commonly used throughout India. The classical works of Charaka, Susruta, and Vaagbhata were studied only by the high class physicians and Aachaaryas.

Thus Aayurveda was kept up as a living science and as the only source of medical relief until the establishment of Allopathic dispensaries, which acted as the rivals of Aayurveda. Surgery also was evidently in practice in the troublous times, when wars were raging between different peoples and with the foreigners.

After the advent of the European nations into India; there was a great competition among the various nations of Europe to exploit the rich treasures of drugs and other economic products. Thus we find a number of books, valuable in their own way, like Pharmacopoeia of India, Economic products of India by Watts, Roxford, Dymoc, Ainslie and many others, who were in great earnestness about their work. They however did not study Aayurveda and did not

come into close touch with the practising Aayurvedic physicians. Therefore their writings are defective and one sided.

Many Aayurvedic works were translated into Persian and Arabic as already stated above. The Mahammadan rulers adopted the Aayurvedic Pharmacopoeia, through Hakeems who were specially patronised by them. The preparations were sometimes altered to suit their tastes. Some drugs from Western Asia, Greece and Rome were introduced through the Hakeems in India. (*e. g.*) Saalamisri and Rubarb.

Aayurveda had an all round development during this period. Compared with the different medical systems of the world of that time, it may be said to have been superior to them all. It was practised as a domestic art and also as a profession throughout Hindustan. There was a fairly big international trade in drugs and prepared medicines. *Aayurveda*, further helped to develop the industries in metals and the arts of dyeing and printing handsome apparel for which Hindustaan was famous. Above all, the culture of *Aayurveda* satisfied the four aspirations of life viz., the physical, mental, intellectual and spiritual development of the people technically known as *Dharma, Arthaa, Kaama and Moksha*. Thus, Aayurveda is not only the science of medicine but also the science of life as a whole. The value of Aayurveda should be appreciated in such an elaborate setting and with such background as a "*guide to perfect life*".

(For other particulars see History of Aayurveda in Chapter 5).

VI

Aadhunika Yuga

(Modern Period).

From 1858 to present times.

[CONTENTS ;—Aadhunika Yuga – Kaliyuga – Cause of Wars—Adharma—The Socio-Philosophical Basis of Hinduism—Fall of the Intellectuals—Structure of the Body Politic—Varnashankar – Mutilation of the Body Politic – The illusion passes away—Raagaadi Diseases—Swaami Vivekaananda, his life—Parliament of Religions, Chicago—Advaita Vedaanta, the Science of Truth—The Reform Movements – The Brahma Samaaj—The Arya Samaaj—The Theosophical Society—National Renaissance—Religion as a Science—Advent of Satya-Yuga—Hindustan to lead the World.

We have in the foregoing pages shown how Hinduism in India was the basis of Buddhism and Jainism in the long ancient past and how it influenced directly or indirectly the birth and growth of Christianity and Islam. We shall in the following pages trace out how the Upanishadic religion of truth "Satya", is, at present, spreading again to all corners of the world, re-establishing the old maxim "*Satya meva Jayati*" – Truth alone succeeds.

Aadhunika Yuga is the modern period. It begins in India with the year 1858 A. D. The last organised effort of the people and princes of Hindustan, including the Mussalmans, to throw off the British yoke was suppressed in that year. Since then, the British authority was established on a secure foundation because the people were disarmed.

Just as in the Muslim period, the higher classes of the people of Hindustan imitated the language, dress and fashions

of the Mussalman Emperors, so also the wealthy and educated classes, during this British period, became enamoured of the European civilisation and began to ape all their habits—good, bad or indifferent. There was a hypnotic spell of illusion which dominated the history of Hindustan for one or two generations.

Kaliyuga

In fact, the Vedic (Hindu) Dharma began to wane rapidly with the advent of Kaliyuga, i. e. over 5,000 years from now. The Mahabhaarata period may be taken as the last record of the golden age of Hindustan. Adharma gradually increased from Satya Yuga down to Kali Yuga. (See pages 19,79) The root of all Adharma is selfishness, i. e. greed, which tempts a man to possess more than his needs.

Cause of Wars.

Charaka traces back the cause of wars and wholesale destitution of human population to Lobha (Greed). See Vimaana Chap. 3.

“Bhrisyati cha Kritayuge Keshamchid Atyaa daanaat Saam-pannikaanaam, Sareeragowrava maseet. Satwaanaam (Sareeraanaam) gowra vaat sramah, Sramaadaalasyam, Aalassyaat sanchayah, Sanchayaat parigrahaah, Parigrahaallobhah praadurbhootah Krite”.

“Tata sthrelaayaam lobhaad abhidrohah, abhidrohaad anrita vachanam-anrita, vachanaat Kaama - Krodha - Maana - Dwesha - Paarushya - abhighaata - Bhaya - Taapa - Soka-Chitto dweqaadayah pravrittaah”. (Cha. V. Ch. 3.)

Charaka says that inability to resist temptation which starts in slight overeating, is the fundamental cause of all human ills including wars. His argument is worth studying. In the earliest times i. e. in Satya (Krita) Yuga, every man

was righteous. He worked for earning his bread and was healthy. But after a time, some people (because they could afford) began to eat in excess of the needs of the body and their bodies became heavy. On account of the heaviness of the body they became tired even by light work. On account of tiresomeness, they acquired the habit of getting lazy. On account of lazy habits, they had a desire to accumulate wealth for future use. On account of this desire for hoarding, they became more selfish. On account of selfishness, they became more and more greedy. The next stage was that they began to cheat others for the sake of getting more and more rich. And then, they began to tell lies. And these increased *Kaama* (desire) *Krodha* (Anger), *Moha* (Pride), *Dwesha* (Hatred), *Paarushyaa* (Haughtiness), *Abhihaata* (Injury to each other), *Bhaya* (Fear), *Taapa* (Heat), *Soka* (Sorrow), and *Chittodwegadayah* (Excitement etc).

Adharma.

As Adharma or unrighteous conduct increases in the country, people begin to neglect their duties (Swadharma) to the Society and to the State. They neglect studies, protection of people, trade and proper cultivation of the lands. The crops begin to fail both in quantity and in quality.

The greed that starts from slight over eating by the leaders becomes the origin of a vicious circle, which in the end is responsible for personal jealousies, wars, and epidemic diseases causing destruction of large sections of population. These have their root cause not so much in the microbes but in the colossal ignorance of the contamination of the minds of the people, all due to Adharma, started by the wise and the rulers and copied by the people. (*Tasya yonih Adharmam*).

The man in the forefront, being unrighteous, leads other people, to adopt the same unrighteous methods. Water

air and soil etc., are polluted by peoples' conduct. Therefore villages, cities and even whole districts are affected by diseases, which attack large numbers of population and destroy them, like helpless animals.

The Socio-Philosophical Basis of Hinduism,

The Hindus were an intensely practical people. They evolved a social structure for the gradual evolution of man into a perfect being. This structure is called *Varnaasrama Dharma*. The Varna, although it literally means colour, determines the best solution for the ordered evolution of society and the Asrama for bringing forth the best qualities of the individual man. The sole object of these two schemes is to avoid conflict in the life of the society. Manu may be said to be the father of all social thinkers, the first to have conceived the theory of 'United States of Social Federalism' and a plan for a perfect and well organised society of *Maanavaas* * (men).

"Chaaturvarnyam Mayaa Srustham,

Guna Karma Vibhaagasah.

(Git. Ch 3-13).

Sree Krishna says "the system of four *Varnaas* was created by me in accordance with the qualities and actions." The qualities referred to here are the temperaments inherited by birth by each individual. They are called *Saatvika*, *Raajasa*, and *Taamasa* temperaments. The *Saatvika* temperament is purifying illuminating and wholesome. The *Raajasa* manifests itself in the form of covetousness, activity, passion

* *Maanava* means man—he who has *manas*, the power of thinking, as opposed to an animal which has no such power. Manu is probably a title and not the name of a person, Kewal Motwani A. M. Ph. D. Manu, A Study of Hindu Social Theory, 1937.

and ambition. The *Taamasa* is of the nature of non-illumination and ignorance. It is manifested through inattention, sloth and sleepiness. *Satva* corresponds to thought (*Jnaana*) *Rajas* to action (*Karma*) and *Tamas* to desire (*Ichhaa*). The dominance of this or that quality in a man's constitution is explained as a result of his past *Karma* or the life lived by him in the previous states of embodiment. The four *varnaas* of *Braahmana*, *Kshatriya*, *Vaissya* and *Soodra* are based upon these natural qualities or temperaments.

Peacefulness, Self-Control, Austerity, Purity, Forgiveness, Wisdom, Insight and Faith in God are the characteristics of the life of a *Braahmana*.

Valour, Heroism, Courage, Skilfulness, Generosity, Masterfulness and fighting to the bitter end, without running away from any battle, constitute the essential characteristics of a *Kshatriya*.

Agriculture, cattle breeding and commerce make up the natural occupation of the *Vaissya* in life.

And the work of physical labour and personal service is that for which the *Soodra* is understood to be naturally qualified.

A little thought will clearly show to us at once that in this apportionment of work to *varnaas* or castes, we have it evidently implied that the life of the *Braahmana* has to be almost absolutely *Saatvika* in character, the life of the *Kshatriya* to be dominantly *Raajasa* and much less strongly *Saatvika*, the life of the *Vaissya* to be largely *Raajasa* and very feebly *Saatvika* and the life of the *Soodra* to be dominantly *Taamasa* and only slightly *Raajasa* on occasions.

1. Hereditary qualities, and 2. qualities acquired through environmental conditions such as educational facilities.

ties are accepted to have a strong influence in moulding human character and in improving human capacity. Although caste by birth continues to command respect, caste by qualities was not unknown. Viswaamitra was a *Kshatriya* by birth and he became a *Purohit*-Bhaaradvaja was a Braahmin by birth and lived as a Kshatriya in the family of *Bharata*. The Mahaabhaarata upholds throughout caste by qualities and not caste by birth. Even in modern times Sree Baala Gangadhara Tilak was a pure Brahmin by birth, but lived mostly the life of a Kshatriya. Mahaatma Gandhi though a *Vaisya* by birth is living the life of a Braahmana. The ideal to be aimed at by all the members of all castes is to become Braahmanaas by qualities in order to render selfless service to humanify. The solution is not by bringing down the higher but by raising the lower upto the level of higher. There is ample evidence in our country that many attempts were made on these lines. Nothing prevents any caste from declaring that they are all Braahmanaas, because each caste is autonomous and is exclusive of the other. The whole purpose of the *Varnaasrama Dharma* is to provide for the healthy growth of the society and of the individual. When this principle is forgotten, it results in disorganisation and disruption of the society.

Fall of the Intellectuals.

The fall of the high souled Braahmana and Kshatriya who are the intellectual and the brave leaders has really brought about the fall of the culture of Hindustaan.

“Pradhaanaah Dharmam utkranya Adharmena Prajaam Pravarttha-yanthi”.

The important people Pradhaanaah (the leaders) themselves transgress the laws of Dharma and lead others to Adharma-unrighteous ways. “Tayoryonih prajna-aparaadha-

yeva". The cause of this again lies in the faulty state of their minds described as greed, anger, pride etc.

Simple living and high thinking which were the guiding principles of the Braahmanaas were given up in favour of luxurious life. They neglected to do their primary duties of studying and teaching-Adhyayana-and Adyaapana.

Structure of the Body Politic.

The doctrine of Chaaturvidhatva (Vide Gita Ch 18-41) which insisted on the recognition of the Oneness of the body politic and of the division of labour in a manner suitable to the robust growth of the society as a whole was misunderstood. The Universe consists of physical, mental, intellectual and spiritual divisions as illustrated by minerals, plants, animals and men. Similarly, the individual man has a physical, mental, intellectual and spiritual body. The body politic or the Society also has the physical, mental, intellectual and spiritual portions of its own body. The Soodra represented the physical the Vaisya represented the mental the Kshatriya represented the intellectual and the Braahmana represented the spiritual force in the body politic. The former forms the larger and the latter the rarer portions of that body, as in the Universe. The physical portion (labour) represented by the Soodra is approximately seventy percent of the total population. The economical and industrial including the agricultural, form twenty percent of the population. The intellectual or the diplomatic including the warrior who protects the nation from enemies represents but ten percent and the spiritual or the Braahmana element represents only two percent. This proportion is as it should be, consistent with the needs of each class. However much one may desire, it is impossible to level down these differences, which are due to Nature (Guna and Karma). The Hindus did not

attach any superiority or inferiority to any one of the above classes or varnas as they always recognised that they are all essential limbs of one and the same body or person. One limb is as useful and as important as the other. They are all limbs of Brahma (Purushasookta).

The whole scheme of the division of the Varnas is conceived in the idea of Sacrifice (*Yajna*)—Sacrifice of the self for the common good. The lower grades are to be sacrificed to serve the best interests of the higher, so that the higher may grow to the best advantage of the whole body—namely the Universe.

This is the biological law of the survival of the fittest. The minerals are sacrificed to feed plant life and the plant life is sacrificed to feed the animal, the lower animals to feed man, the lower man to feed the intellectual or higher man. This is the essential Law of *Swadharma*. It is the Law of Progression.

Varna Sankara.

The four departments of state, the teaching department represented by the Braahmaana, the administrative department represented by the Kshatriya, the economic department represented by the Vaisya, the labour department represented by the Soodra should receive equal attention in the body politic in order that the State may be prosperous and long lived. When there is *Varna Sankara* i. e. when any one of these departments is neglected, or when there is over crowding in any of the departments, disruption of society is sure to follow. Professional rivalry, jealousy, exploitation of the weaker, oppression, starvation, discontent, war and disease are the usual consequences.

Mutilation of the Body Politic.

The body politic is thus cut up and mutilated and each bit is allowed to grow independently like the pieces of Amœba in the mud. Each part is allowed to grow without any care or responsibility for the growth of the whole. Selfishness prevailed everywhere. The *Braahmanaas* neglected and kept quiet when the other members of the society were under going degeneration and so also was the case with the others when *Braahmanaas* were degenerating.

In this state of irresponsible condition, the foreigners found in the Braahmanas many intelligent slaves because they sold away their independence and bartered the country for the sake of their own convenience. The *Braahmana* was preferred for service because of his merit in serving his new master faithfully, as he did under the *Kshatriya* master of old.

"Thus, the bane of political serfdom together with the attendant evils of the new system of education sat upon the Hindu Society like a horrible nightmare. Generations of quixotic cultural hybrids raised their heads like mushrooms all over the country. They were neither Indian nor English, in their taste, temperament, intellectual outlook and ways of life. They had scarcely any faith in their forefathers and their hoary culture, and they deemed it wise to set a premium on aping, though imperfectly, the English, who had appeared in the role of their political masters and intellectual guides."

The Illusion Passes away.

But this was not to be. India escaped the impending crash almost by a miracle. Something happened beneath the surface of things perhaps the Divine Will flashed—and India

began to show unmistakable signs of a spiritual awakening. * "The only consolation is that the spirit that never failed the nation percolated the soul of the Hindus, as well as Mussalmans through the innumerable *Tols*, *Gurukulaas*, and *Mukhtabs*- village schools so wonderfully efficient and pervasive in character as they put to shame the record of our burcaucratic primary education, a century later in date." Towards the second quarter of the Nineteenth century while India was about to lose herself completely in the cultural welter, suddenly she found her feet and wanted seriously to assert herself. The vitality that had been lying dormant deep in the heart of the nation under a spell of enchantment was braced up and marshalled against the heavy odds that had been out to crush its cultural existence. This revolt of the instinct for self-preservation had the desired effect. The hypnotic spell of foreign civilization began to recede slowly but steadily before a rising wave of self-consciousness of the Hindus. Mighty movements of socio-religious reform sprang up, one after another to resuscitate the Ancient Culture of India and lead her once more to evolve a glorious future.

Maharshis, great seers of Truth, are born in *Hindustan* from time to time. *Sree Raamakrishna Paramahansa*, *Raja Raamamohan Roy*, *Sir. J. C. Bose*, *Sri Baala Gangaadhar Tilak*, *Arabinda Ghose*, *Rabindranaath Tagore* and *Mahaatma Gandhi* are such *Maharshis*. To them Truth is self revelation, as the light that shows itself. They are *Trigunaateeta*-Transcendent-untouched by *Raaga* and *Lvesha*-Desire and hatred.

Sree Raamakrishna Paramahansa proclaimed the superiority of *Advaita Vedanta*, the essential teaching of which

* (Cult, Heritage of India Vol, II. 398).

is Universal Brotherhood. He stressed the importance of the *Upanishadic* teachings, that materiality which is the common enemy of the world should be conquered and that love instead of hate should be our guiding principle. 'Even age long darkness' he said 'disappears as soon as light is brought in.' We must love each other and do good to others because we are all one, being made up of one stuff. That is what *Vedaanta* teaches.

Raagaadi Diseases.

Desire and hatred are considered as diseases in *Hindu* philosophy, so also in *Aayurveda*.

*"Ragaadi rogaan salataanu shaktaan,
Asha kaaya Prasritaanaseshaan (Vaaghata)"*

Raagaadi diseases are natural to every being. They permeate in every living cell. They are everywhere and at all times. It is a knowledge of the eternal Truth, i. e. the realisation of God—that can cure all diseases permanently. He who knows the Truth is a *Braahmana*. The *Braahmana* was again born in Hindustaan in the incarnation of *Sree Raama-krishna Paramahansa* on the banks of the *Ganges*. He was the *Sree Krishna* and the *Sankaraachaarya* of 19th Century. The *Vedaanta* philosophy of Universal brotherhood ripened in him. He could not hide himself in mystic contemplation in caves or sit statue-like on a river bund, but worked with all his mite for the world around him. He brought together a band of young men under the command of *Narendranaath Datta*—the famous *Swaami Vivekaananda* of the later days.

Swaami Vivekaananda-His Life

Vivekaananda (Narendranaath Datta) was born on 12th January, 1863, in an aristocratic Kshatriya family at Calcutta. As a full fledged University Graduate, he was a votary

of reason and he regarded ecstatic visions, as hallucinations and as creations of a diseased brain. His father died in 1884 leaving the family in debt. Barefoot, he had to wander from office to office, but was repulsed on all sides. He had to fast on many days for want of enough food to go round at home.

Gradually with the association of *Sree Raama Krishna Paramahansa*, he succeeded in obtaining transcendental Union with the Absolute Reality through *Nirvi Kalpa Somaadhi*. He became one with Supreme *Brahman*. One day at the suggestion of his Master, he prayed to the Divine Mother *Kaali* at the *Dakshineswar* temple.

"From this day when he perceived the Divine presence of *Kaali* in the temple and experienced the ecstatic and exalted mood of Bliss and illumination that followed, he had the conviction up to the end of his life that "it is the heart that reaches the goal. A pure heart sees beyond the intellect : it gets inspired; it knows things that reason can never know. The pure heart is the best mirror for the reflection of Truth. . . . As soon as it is pure, all truths flash upon it in a minute, and that what we really want is head and heart combined. Thus the confirmed votary of pure Reason grasped the value and significance of the spiritual intuition of a pure heart, which alone can unlock the gate of the unseen Reality. His reason yielded to faith; his domineering intellect became a submissive and faithful ally of his pure heart; and it was this wonderful alliance that made *Vivekaananda* what he was. From this day, he became a new man and practically started on a new career. His atheistic reactions were over, and his faith coming from within the depth of his heart coloured and controlled all his thoughts, words and deeds":*

* Cultural Heritage of India Vol. II.

By his visits to Western countries, he raised the status of *Hindustaan* at one stroke and for ever. *Swaami Vivekaananda* in his European tours established the superiority of *Advaita Vedaanta* over all other philosophies of the world.

Vedaanta, the Science of Truth.

The *Vedaantists* proclaim God to be the Cause of all causes. The finer state is the cause and the grosser state is the effect. Modern science tells us, that things that are destroyed only go back to their finer forms. *Vedaanta* tells us that the case with the universe as a whole is the same. After each cycle, all gross manifestations return to the final state (i. e.) the primal substance. All things of the universe in the form of motion, vibration, thoughts, resistance, object etc., are but various modifications of that primal substance. The modern scientists know only evolution but not involution. The *Vedaantists* have gone a step further in the quest of Truth. They assert that evolution presupposes involution. The whole series of evolution from the protoplasm to the perfect man involves one intelligent substance. It is the same throughout the process of creation as well as before and after it.

The intelligence which is involved (hidden) in the beginning becomes evolved into the world of names and forms. This cosmic Intelligence (*Chit*) is the Supreme Reality. It is called *Sat Chit Aananda*—Existence—Knowledge—Bliss—all in One. It is God.

“Rightly has *Swami Vivekaanand* said, “You and I are little bits, little points, little channels, little expressions, all living inside of that infinite Ocean of Existence—Knowledge—Bliss. The difference between men and animals, between

animals and plants, between plants and stones, is not in kind, because everyone, from the highest angel to the lowest particle of matter, is but an expression of that one infinite Ocean, and the difference is only in degree. It is the immanent principle that pervades all forms of matter and energy, and apart from it nothing has a reality of its own."

"What our country now wants" said he, "are muscles of iron and nerves of steel, gigantic wills that nothing can resist, which can penetrate into the mysteries and secrets of the universe and will accomplish their purpose in any fashion, even if it meant going down to the bottom of the ocean and meeting death face to face. That is what we want, and that can only be created, established and strengthened by understanding and realizing the ideal of the Advaita, that ideal of Oneness of all". And again, "Let me tell you that we want strength, and every time strength. And the *Upanishads* are the great mine of strength. Therein lies strength enough to invigorate the whole world, the whole world can be vivified, made strong, energized through them. They will call with trumpet voice upon the weak, the miserable and the down-trodden of all races all creeds and all sects to stand on their own feet and be free; freedom-physical freedom are the watch-words of the *Upanishads*." He dinned into the ears of his Hindu compatriots; "Teach yourselves, teach everyone his real nature, call upon the sleeping soul to see how it awakes. Power will come, glory will come, goodness will come, purity will come and everything that is excellent will come when the sleeping soul is roused of self-conscious activity".*

Swami Vivekaananda's exposition and his great triumph

* (Cult. Heritage of India Vol, II. 595).

at the Parliament of Religions held in Chicago on 11th Sept., 1893 is a great National event for *Hindustaan*. It is one of the turning points in the history of this country. He gave a new emphasis and power to the central Truths about *Hinduism*. Religious Toleration, which is a tenet of Hinduism is emphasised by *Swami Vivekaananda* in his great speech at Chicago.

Parliament of Religions-Chicago

"The *Swami's* majestic appearance expressive of a manhood, combined with his strikingly attractive apparel, made him conspicuous among the Oriental delegates. He waited till the end of the day to take the last turn of making a short speech by way of announcing himself before the great Assembly. As he rose to speak, admiring and curious eyes were fixed upon the stately figure of the *Swaami*, with black hair, large and lustrous eyes, red lips and olive complexion set off by a big yellow turban and flowing ochre robe, drawn in at the waist by an orange cord. He opened his lips to accost the audience endearingly as "Sisters and brothers of America" and he was overwhelmed by deafening cheers from all corners of the hall. Silence followed, and *Vivekananda* poured out his heart. Perieft of cold formalities, rigid dogmas and hollow, stilted or illusive phraseology, his artless and spontaneous speech proceeded from the fullness of his heart and verily "he spake like one in authority". The surging stream of spirituality of endless love for God and dified humanity of Universal faith in all religions-the stream that had its birth on the snow-capped heights of the heavenly life of *Raamakrishna* and had descended to the immaculate heart of his chosen disciple, suddenly broke through all barriers and gushed out in a torrential rush of apostolic love and wisdom. The house was flooded by waves

of spirituality. The enraptured audience, listening to the age-old message of unbounded catholicism of the *Hindu* seers, saw new light beyond the misty hedges of sects, communities, churches and denominations. Many eyes were opened, many souls were stirred and the speaker was greeted by a fitting and unique ovation.

He declared with all the emphasis that he could command: "The *Christian* is not to become a *Hindu* or a *Buddhist*, nor a *Hindu* or a *Buddhist* to become a *Christian*. But each must assimilate the spirit of the others and yet preserve his individuality and grow according to the world. That holiness, purity and charity are not the exclusive possessions of any Church in the world, and that every system has produced men and women of the most exalted character. In the face of this evidence, if anybody dreams of the exclusive survival of his own religion and the destruction of the others, I pity him from the bottom of my heart, and point out to him that upon the banner of every religion will soon be written in spite of his resistance, "Help and not Fight, Assimilation and not Destruction, Harmony and Peace and not Dissension."

Reform movements

Brahma Samaaj.

The earliest of reform movements was the *Brahmo Samaaj* founded in the third decade of the nineteenth century by *Raja Ramamohan Roy*, the first great patriot and reformer of modern India. He hailed with delight the *Upanishadic* texts on the formless *Brahman* without attributes, and perhaps he felt relieved to find that view of God came almost in line with the concepts of Islam and Unitarian

Christianity. The gates of the *Samaj* were flung open to all men, irrespective of caste, community or nationality.

The sense of equality and liberty awakened by the system of education was given a rather free play in remoulding social customs. The *Brahma Samaaj* was solid for the emancipation of women from all forms of social iniquities. It was up against early marriage and forced widowhood, and worked intrepidly for female education on modern lines. Later on, it launched a crusade against the caste-system and succeeded on banishing it altogether from the *Brahma* fold. Under the able guidance of its brilliant leaders like *Raajaa Raammohan Roy*, *Maharshi Devendranaath Taagore* and *Keshab Chandra Sen*, who came in close succession, the *Samaaj* passed through several phases of a highly useful career. It was primarily a Bengal movement with its headquarters in Calcutta, the then metropolis of India, and had a very few followers outside this province.

In its conception of religious faith as well as social reform the *Brahma Samaaj* learned at times to a considerable extent on exotic ideals; From its very inception it bore the stamp of Western Christianity. *Raajaa Raammohan Roy* borrowed freely from Protestant Unitarianism to gloss over his *Upanishadic* creed, and *Keshab Chunder* went so far as to soak the very core of the *Brahma* creed with Christian ideals. Social customs also came to be flavoured rather too richly with the spices of Westernism. This frenzied rush for foreign religious sentiments and social habits made the *Brahma Samaj* alien to *Hindu* traditions.

Aarya Samaaj.

When in the seventies of the last century, the *Brahma Samaaj* of Bengal, under the leadership of *Keshab Chunder*,

was about to be sucked in the maelstrom form of Christian ideals, up rose from another corner of India a powerful religious movement that had no soft words for anything foreign. It came as a bold, and straightforward challenge against the whole host of Western influence, materialistic as well as religious. Through this movement, India asserted herself once more, and this time gave a free, vigorous and absolutely uncompromising expression of some of her own religious ideals. When she was almost cornered by the currents of modernism, she turned round and took a bold stand on the solid rock of her own ancient ideals.

This was the *Aaarya Samaaj* movement launched in 1875 by *Swaami Dayaananda* in Bombay. The sponsor of this movement, like all traditional *Hindu* reformers, belonged to the monastic order. He was a thoroughbred *Hindu Sannyasin*, a vastly erudite *Vedic* scholar and a thundering polemic of the Indian type. From every point of view, he was a chip of the old block, and as such he differed widely from the *Brahma* leaders, who were intellectuals of the Western type, and who went in for finding a half-way between *Hinduism* and modern thoughts.

He translated and interpreted the *Vedas* according to his own lights and stuck to his own view of the true *Vedic* religion with passionate loyalty. In his religion, there was no room for the Absolute *Brahman* of the strict monist, nor for the dualist's Object of worship with various names and various forms. His iconoclastic zeal very naturally compelled him to walk out and make a room for the *Aarya Samaaj* outside the precincts of the *Hindu* society.

This religious movement also was accompanied by sweeping changes of social customs. The caste-system as a religious institution was abolished; the monopoly of the Bra-

ahmins over the *Vedas* was denied; women were liberated from a number of social disabilities. Besides, enthusiasm for wide range of philanthropic activities including the spread of education became a remarkable feature of the *Aarya Samaaj*. All over Northern India, specially in the Punjab, this new creed spread like wild fire, and in course of a few decades brought several lakhs of followers within its fold. Thus has the *Aarya Samaaj* repelled from an extensive area the disastrous inroads of foreign culture and thereby recorded a chapter of momentous achievement in the cultural history of this land.

Theosophical Society.

The Theosophical Society was started in New York in 1875. Theosophy is an interesting combination of mysticism, rational Philosophy and scientific ideas. Madame Blavatsky, a Russian lady and Colonel Alcott, an ex-army officer of England were notable amongst the Founders. Drawing profusely from *Buddhism* and *Hinduism*, Theosophy has an oriental look and succeeded in making converts in the West by thousands. This novel creed, caught the fancy of a group of enlightened Indians and through the energetic efforts of Mrs. Annie Beasant, who made India her adopted home, safeguarded *Hinduism* against the inroads of Atheism and Christianity particularly in the South of India. Annie Beasant fought fearlessly and suffered persecution for the establishment of Home Rule in India and she was responsible for advancing the country a step further towards independence.

Theosophy did not go in for any drastic changes in social customs. One could well remain within the *Hindu* fold and yet subscribe to Theosophy. The Theosophical Society contributed substantially to revive the faith of the enlightened *Hindus* in their own sacred lore by extensive publication of *Hindu* Scriptures with translations.

National Renaissance.

During the 20th Century, there has been an all embracing national renaissance throughout *Hindustan*. Whereas in the East, the *Brahma Samaaj* in Bengal, in the North the *Aarya Samaaj* and in the South, the Theosophical Society were conserving whatever they considered best in their ancient lore on the West of *Hindustaan Sree Baala Gangaadhar Tilak*, the leader of *Mahaarastras* patronised the orthodox *Hindu Dharma*, following the foot steps of their great leader *Sree Sivaaji Mahaaraj*. *Pandit Madan Mohan Maalaveeya* founded the *Hindu* University at Benares also to conserve the orthodox *Hindu* traditions. Another University was started at Alighar to conserve the Islamic traditions. The Indian National Congress was started in the year 1885 for securing political advancement for *Hindustan* through constitutional measures. The boycott movement was started in Bengal in 1905 along with the independence movement under the leadership of *Sri Aravinda Ghose*. Mrs. Annie Beasant encouraged passive resistance under the name of the Home Rule movement in the year 1923 for securing absolute *Swaraaj* for *Hindustan*.

Swami Vivekaananda passed away in the year 1902, but the cultural self consciousness of *Hindu* Community asserted itself for ever. The *Hindus* are no longer ashamed of any constituent of their religious faith and philosophy of life. On the other hand, they are found in the roles of bold exponents of "the *Hindu* view of life" even before the Universities, Scholars and Savants of Europe and America, and many among their Western audience are found to be really interested in the hoary culture of the *Hindus*. And it is, moreover, a fact that a few leading intellectuals of the occident have become no less enthusiastic in broadcasting the *Hindu* ideas and ideals.

The Hindus are becoming justly proud of the momentous achievements of their forefathers not only in the fields of religion and philosophy but also in the various secular fronts of social life, and medieval history of India. A band of brilliant historians and archaeologists has come up from Indian Universities and set itself seriously to construct this important and necessary plank of nation building.

It is particularly within this period that the spirit of scientific research has spread all over India through the different Universities, and already some of the scientists of this country like *Sri J. C. Bose* and *Sir. P. C. Ray*, *Prof. M. N. Saha* and *Prof. Sir C. V. Raman* have obtained distinctive honour from foreign institutes of science. It is worth noticing that even in this academic field, the researches of *Sir. J. C. Bose* on the sensation in plant life bear the characteristic hall-mark of the ancient *Hindu* mind. He himself confessed before his Western audience that he was demonstrating with modern instruments, and elucidating through modern scientific method, a truth about plant life that had been discovered ages ago by the *Hindu* seers. *Sir P. C. Ray's History of Hindu Chemistry*, *Sir B. N. Seal's Positive Sciences of the Ancient Hindus*, the valuable work of *Dr. K. M. Nadkarni* and *Dr. Mohiddin Shariff*, *Drs. Kirtikar and Basu* and of *Col. R. N. Chopra*, show unmistakably how the self-consciousness of the *Hindu* mind is expressing itself even in the realm of science, by recovering and holding before the world all that Ancient India thought had achieved. By linking up modern achievements with the ancient ones, not only in pure science but also in its applied branches like Aayurveda (Medicine), India is presenting before all a continued and systematic history of the cultural evolution of the *Hindus* relating to the pursuit of scientific truths. (Cul. Her. Vol. II. P. 613).

The All India *Ayurveda* Mahaamandal established in the year 1907 under the leadership of great Pandits like *Sankara Daaji Saastri Pade* has been working for the regeneration of *Ayurveda* in all its departments on more or less on orthodox lines. *Vaidyaratna Pandit D. Gopaalaachaaryulu* was the first to start an *Ayurvedic* college and a free *Ayurvedic* dispensary on modern lines in the year 1901 at Madras.

Sciences and Arts in Hindustaan, their Object.

The Sciences and Arts of India were divided into thirty two Saastras and sixty-four Kalaas. *The Saastras (Sciences) deal with acquiring accurate knowledge and the Kalaas (Arts) deal with the application of the sciences to the Arts. The practice of the Art without the scientific knowledge would be imperfect, and similarly mere study of a science without sufficient practical application would be useless. He who is not perfect in both is compared to a bird with only one wing or to a chariot deprived of one of its wheels. The knowledge of the Saastras requires close study of the books, but in the case of a Kalaa (Art) book knowledge is not so necessary. Even a dumb person may be an expert in his Art by a gift of intuition or by continued practice.

Vidyaa hyanantaa scha kalaa ssamkhyaatum naivasakyate,

Vidyaa mukhyaascha dwaatrimsa chhatussastih

Kalaasmritaah

*See *Kaama Saastra* by Aadinaaraayana Saastry, Telugu pages 77-102, 147-153 and *Bhaaratleeya Vignaanam (Telugu)* and the Articles on *Hindu Astronomy*, *Vedic Mathematics*, *Botany in India*, *Art in Indian Life*, *Principles of Indian architecture*, *Indian Sculpture*, *Indian printer and his art*, *Cultural aspects of Indian music and dancing etc.*, in Vol. 3. *Cultural Heritage of India* by Ramakrishna Centenary Committee, Belur Math. Calcutta.

yadyatsyaad vaachikam samyakkarma vidyaabhi sanjnikam
Sakto mookopi yatkartum kalaa samjnaatu tatsmritam.

Education Round the Craft.

In India, all the arts were taught round the craft and not so much through books. We now see so many huge temples and wonders of Hindu architectural art scattered throughout the country. The Engineering Colleges where these arts and crafts were taught existed in the temples or the architectural structures themselves. The Gurukula system was followed even here and it was adopted suitably to each craft. The Indian system of education was education through work, something quite different from mere book education.

Thirty Two Sciences.

The thirty two sciences are:

1. Rugveda, 2. Yajurveda, 3. Saamaveda, 4. Adhar-
vanaveda,—Four Vedaas 5. Aayurveda, 6. Dhanurveda,
7. Gaandharva Veda, 8. Thantras (Aagamaas) Four—Upavedaas,
9. Sikshaa, 10. Vyaakaranam, 11. Kalpam, 12. Niruktam,
13. Jyotishyam, 14. Chandas—Six Vedaangas. 15. Meema-
msa. 16. Tharka, (Nyaaya-Vaisheshika). 17. Saankhya,
18. Vedaanta, 19. Yoga—Five Saastras, 20. Itihaasa,
21. Puraana, 22. Smrithi, 23. Naastika matha, 24. Artha-
saastra, 25. Kaamasaastra, 26. Silpa Saastra, 27. Alankaara,
28. Kaavyas, 29. Desabhaasha, 30. Swarokthi, 31. Yavana-
matha, 32. Desaadi Dharma, (Customs and habits of different
places and times).—13 other saastras or sciences.

Sixtyfour Kalaas.

The Kalaas or arts were numbered sixtyfour. These Kalaas were divided into 3 groups. Group A. Gnaanaasraya—concerning knowledge, B. Karmaasraya—concerning work or

profession; C. Dyoothaasraya—concerning games and pastimes intended for recreation.

Special Education for Girls in India.

A study of these kalaas was compulsory in the curriculum of education of enlightened girls in ancient India. Vaatsaayana says "The King's daughter or the daughter of a nobleman well-versed in these arts will have her husband under her sway even in a harem of thousand women. A woman gifted with these arts will by these means live comfortably even when her husband is in exile or when he is suffering from a great trouble or when she has become a widow or when she is compelled to live in a foreign country" (1-3-13). These arts were taught to girls before marriage and if they were to be taught after the marriage, it should be done with the permission of her husband or at least with his knowledge. Practical training in some of these subjects was given by employing teachers in whom they had great confidence. The following is a list of teachers fit for such purpose in the order of their preference.

1. *Dhaatreyika*: Daughter of her nurse, who was brought up with her and who possesses proficiency in the subjects:
2. *Sakhi*:—A trusted woman friend, who is free in her conversation with her.
3. *Savayaascha Maatruswasi*: mother's younger sister of the pupil's age.
- (4). *Vruddha Daasi*: an elderly woman servant, who is trusted and who is to the girl like the younger sister of her mother.
- (5). A nun proficient in these arts.
- (6) Girl's own elder sister (1-3-15).

Anga Kalaas (Essential Arts).

1. *Geetha*: Singing or vocal music.
2. *Vaadyam*—Playing on musical instruments.
3. *Naatya*: Dancing
- 4.

Aalekhya—painting: 5. **Viseshakachhedya**: the art of beautifying the face or the toilet of the face; 6. **Thandula Kusuma bali Vikaara**: This art consists of collecting seeds of various colours and decorating marble floors and plates of brass etc., with floral and other designs. 7. **Pushpaastarana**: Carpetting the walls with flowers of various designs, or decorating works with floral designs. 8. **Dasana Vasana angaraaga**: Improving the shining, colour or complexion of teeth clothes, parts of the body, chiefly lips, nails, and cheeks, to promote attraction 9. **Manibhoomikaa Karma**: Constructing mosaic floors with gems, decorating special rooms in the house, by studding the floor with precious stones of various colours. 10. **Sayana Rachanaa**: The art of making beds according to seasons of the year and tastes of individuals. 11. **Udakavaadyam**:— The art of playing on water so as to produce musical sounds as if from an instrument or **Jalata-rangam**. 12. **Udakaaghaatham**:— Throwing natural or colored or scented water at others with hands or with instruments like syringes 13. **Chitra Yoga**:— This is a secret art of preparing medicines for deforming or disabling rivals: 14. **Maalya-grathana Vikalpa**: making garlands with flowers of one or different colours: 15. **Sekarakaapeeda Yojanam**:— The art of making crowns of flowers 16. **Nepathya Prayoga**:— The art of selecting attractive jewels and dress according to the place, time and suitability. 17. **Karnapatra Bhanga**: The art of decorating the ears with ornaments or flowers, or ivory scrapings. 18. **Gandha Yukti**:— The art of perfumery. 19. **Bhooshana Yojana**:— The art of wearing ornaments, **Samyojya**—hooked like necklaces and **Asamyojya** like bangles. 20. **Indrajaala**— The art of producing illusions by hypnotism or performing miracles, 21. **Kauchumaana Yoqa**:— The art of increasing sexual virility and the strength of the body. 22. **Hastalaaghava**:— Nimbleness or the slight of the hand, so as

to deceive the audience; 23. *Vichitra Saaka Yoosha Bhakshya Kriya* :— the art of preparing food, soups, vegetables, sweet-meats, and other eatables 24. *Paanaka Rasa Aasava Yojana* :— the preparation of different kinds of drinks or *Paanakas*. 25 *Soocheevaana Karma* :— Needle work as in making shirts, darning, manufacturing quilts. 26. *Sootrakeeda* :— Playing with strings of coloured thread, making dolls dance by invisible strings attached to them 27. *Veenaa Damaruka Vaadya* :— playing on the *Veena* and *Damaruka*. 28. *Praheleka* :— the art of solving riddles. 29. *Pratimaala* :— the art of recitation (poetical) 30. *Durvaachaka Yoga* :— The art of reciting verses bristling with hard syllables. 31. *Pustaka Vaachaka* : the art of reading standard works in melodious tones, 32. *Natakaak-hyaayikaa Darsanam* : the art of *Drama*, or the art of telling a story such as a novel. 33. *Kaavya Samasyaa Pcoranam* : Filling up blanks in verses. 34. *Pattikaa Vetra Vaana Vikalpa* : Rattan and Bamboo work. 35. *Tharku-karma* :— making artificial appliances 36. *Thakshana* : Carpentry. 37 *Vaastuvidya* :— Building construction. 38 *Roopya Ratna Pariksha* :— Art of testing precious stones and metals 39. *Dhaatuvvaada* :— Metallurgy and Chemistry. 40 *Maniraagakara jnanaam* :— polishing precious stones and diamonds locating and working mines etc., 41. *Vriksh aayurveda* :— Science relating to the plant life 42. *Meshakukkuta laaraka Yuddha Vikalpa* :—Training rams, cocks and laarakas (birds) to fight. 43. *Sukasaarikaa Pralaapam* :— Teaching parrots, doves, etc., to speak human languages 44. *Utsaadana Samvaat and kesamardana Kausalam* :— The art of Massage, cleaning and shampooing the hair etc., 45 *Akshara mustikaakathana* :— the art of speaking or writing in cipher languages. 46 *Mlecchita Vikalpa* :— The art of altering the positions of letters as in a code language 47. *Desabhaasha Vijnanam* :— Knowledge of the languages of different countries 48. *Pushpasakatika* :— Making curious such as chariots

with flowers. 49. *Nimitta Jnaanam* :- Knowledge of cause and effect and foretelling the future, 50. *Yantramaatrika* :- Constructing machinery for locomotion, and for pumping water etc. 51. *Dhaaranamaatrika* :- The science of memory training. 52. *Sampaathyam* :- the art of memorising recitals or slokas. 53. *Maanaseekaavyakriya* :- Thought reading and poetic Art. 54. *Abhidhaanakosha* :- Memorising a dictionary. 55. *Chandognaanam* :- Prosody. 56. *Kriyaakalpa* :- Alankara (Rhetoric). 57. *Chalitaka Yoga* :- The art of deception in which the voice and person are disguised. 58. *Vastra Gopanam* :- The art of dressing skilfully. 59. *Dyoota Vishesha* :- the art of gambling 60. *Aakarshakreeda* :- The art of gaming with dice 61. *Baalakreedaanaka* :- Children's games and pastimes. 62 *Vainayiki Jnaanam* :- training of animals 63 *Vaijayiki gnaanam* :- The art of obtaining victory-over opponents. 64 *Vyaayaamaki Jnaanam* :- the art of physical excercises, wrestling etc.,

The above is *Vaatsaayana's* classification of the 64 arts (i. e.) *Angakalas*, the essential arts which are necessary for the acquisition of knowledge, for earning a living and for recreation. In addition to the above, he gives a list of another set of 64 arts called *Paanchaala Chathussashti*, the fundamental arts (*Moolakalaas*), which relate to the sexual sciences directly. In this list, 24 arts relate to work, 20 relate to games 16 relate to the bedroom, and 4 are auxiliary to sexual life—total 64.

Sukraneeti Saara, and other books give separate lists of the 64 Arts, as reckoned in their respective periods.

In one list, 7 arts relate to *Gaandharva Veda* and include music, dancing etc.

10 relate to *Aayurveda* and include (1) preparation of medicated wines, (2) of syrups, honeys, and preparing dietary (3) surgical operations, and blood-letting (4) horti-culture,

(5) pharmacology, (6) sugar refining and modifying (7) reducing metals from ores, (8) converting metals into powders, (9) preparation of mild and caustic alkalies, and (10) treatment of diseases like fevers.

5 relate to *Dhanurveda* and include Sword play, Boxing, Wrestling, Archery and skill in handling animals.

Among others in this list are skill in *Yoga Asanas*. Mudras, Jewellery and Pottery, Engineering, mixing of paints and dyes, Navigation and Ship-building. Rope making, Diamond cutting. Dairy farming, *Kshura Karma* (hair cutting) Washing and dyeing clothes. Extracting ores, Basket weaving, Glass manufacture Irrigation and so on.

Every art that flourished in India created a new caste and thus we have 518 Arts and as many castes were recognised in India, giving rise to 518 autonomous units in the Society. (*Vaatsaayana*—By Adinaaraayana sastry—p. 78).

Glass Industry at Takshasila.

You will be astonished to read about the glass industry which existed in *Hindustaan* in those days. *"In another chamber, F. I. was a floor of glass tiles of bright azure blue with a few other colours—black, white and yellow—mixed with them. These tiles average 10 1/4 inch square by 1 1/3 inch thick and are of transparent glass, the first complete specimens of their kind, which have yet to come to light in India.....In connection with these tiles it is interesting to recall the Chinese traditions that glass making was introduced into China from Northern India. Probably the whole procession path round the temple at Taxilla was at one time paved with these glass stones." Specimens of these tiles may be seen at the Museums at

* Guide to Taxilla by Sir Johu Marshall pages 58 and 59.

Taxilla, Patna and London. It is no wonderful palace built by Maya. It was so constructed with the aid of glass of different hues that one was deluded to observe the presence of water, where there was no water and vice-versa. This glass industry, as you can very well see now, was one of the causes of the great Mahaabhaarata War.

Aayurveda as a Domestic Art.

In the chapter on Bhaaryaadhikarana (duties of wife) in Kaamasastra (4-1-28) we find among others, the mention of the following arts among the duties of a wife, viz; the collection of seeds of vegetables suitable for diet and their cultivation and the collection and preservation of common herbs used in domestic medicines.

Moola kaaluka paalankee damana
 Kaamraata Kairvaaruka traapusa vaartaaka
 Kooshmaanda alaabu soorana sukanaasaa
 Swayamguptaa tilaparnika agnimandha lasuna
 Palaandu prabhriteenaam saivaushadheenaam cha
 Beejagrahanam kaale vaapascha (4-1-29)
 Tadhaa lavana sneha yoscha andha dravya
 Katuka bhaandaushadhaa naam cha durlabbaanaam
 Bhava eshu prachhannam nidhaanam. (4-1-28)

Similarly, we find that Aasavaas and Aristaas were prepared under the supervision of the housewife, who had to see to their proper use and their sale according to the needs of the family and also to keep their accounts.

"Suraakumbheenaam maasavakumbheenaam cha
 Sthaapanam tadupayogah kraya
 Vikayaayuvyayaa vekshanam.

This is one of the reasons why Aayurveda has been firmly established as a domestic art in Hindustaan.

Hindu Dharma and Greater India

These sixty four arts and 32 science were cultivated in Hindustaan as separate branches of knowledge but all these arts and sciences were so developed as to bring about a consummation of the idea of the Oneness of the Universe and of the Creater. The Hindus spread the Hindu Dharma wherever they went. The Greater India included the whole of Burma, and the whole of Indo-china and expanded in the East Indies as far as Philippines and in the West it included the whole of Afghanistan then known as Gaandhaara.

Read the excellent articles on "The *Hindu* Kingdoms of Indo- China and Java, *Hindu* Culture and Greater India in Vol 3-Cultural Heritage of India.

The famous Angkor Vat, the city Temple about a mile from the capital, Yasodharapura (Angkor) of Cambodia, built towards the close of 12th century A. D. was one of the greatest and the most archetictural cities of the world in the middle ages. The central tower, crowning the main shrine rises 213 feet above the ground level. There are three galleries, one in each terrace, and the first gallery is adorned with splendid bas-reliefs depicting court scenes and scenes from the *Raamaayana*, *Mahaabhaarata*, and *Harivamsa*. A point to be noted is the predominant part given to *Vishnu* and *Raama* and *Krishna* incarnations.

The Art of Navigation.

The *Hindus* were the best navigators of the world until their art and trade were actually killed by the unjust regulations of the British Parliament.

"The East India Company were naturally convinced that India built ships, ended only when they "were wrecked or they became obsolete" but "they never wore out". The Company, therefore, in the first instance, imported an English ship-builder; to wit, Mr. Warrick Pelt, in 1668, and

he built two ships at *Soorat* for them, the equipment and stores for which were brought over from England. He established a yard at *Soorat*, which was maintained upto 1735 and then transferred to *Bambay* along with its foreman, Mr Lowjee Nuserwanjee, whose family ultimately became the master snipwrights and ship-builders of the Company, and held that position for a good part of a century and a quarter.

"In the year 1814, the Parliament laid down that Indian sailors even though they were the subjects of His Majesty of England shall not be deemed to be "British mariners" and any ship even though British, which had not on board three-fourths of its crew of British mariners or seven British mariners per 100 registered tons, would be liable to forfeiture, and that no ship was to enter the port of London whose master was not a British mariner". Thus a great national industry, art and trade were destroyed. (Gaandhigram-1941).

Religion As a Science.

We have, so far traced the cultural history of *Hindu* giving more prominence to the social, economic, religious and philosophical growth of the nation, than to battles and kings.

There is no partition wall in the *Hindu* mind between the secular and the spiritual which are wonderfully blended into a harmonious whole. Even the care of the physical body is looked upon as a sacred duty, necessary for spiritual welfare.

Let each individual in the society endeavour to realize his own spiritual welfare, and then it must happen that his own personal interests cannot run counter to the interests

of others. The ultimate goal being the same, the paths followed by separate individuals, though different according to the special environment of each, are bound to be convergent, and there should be no occasion for conflict.

In his relation to the rest of society, every individual, according to the Indian scheme, lays stress upon his duties—his *Dharma*—by which he is to secure his own advancement, and thus he may be distinguished from the European, who emphasizes his rights. Of course, the one implies the other, but while right looks to the acquisition of power and comforts for the physical self, the path of duty lies through the discharge of debts which a person owes to all about him—to his fellows in the community, to his forefathers and to all sentient beings. At his very birth, a *Hindu* is born charged with liabilities, as owing a debt to the gods, to the *rishis*, to the fore fathers, to men and to other living creatures. *

The Indian life is in all aspects bound up with religious observance calculated to bring about a realisation of the ultimate truths, by a graduated course of mental and moral discipline. The human body is treated as one whole i. e. body, mind and soul, all as one entity. The humanity is similarly conceived as a whole and the universe also as a whole.

We have already stated that all quarrels, wars and epidemic diseases arise on account *Adharma*, which starts in the selfishness of individual leaders and which infects others and thus effects the growth of communities and nations.

* Taittariya Bhraahmana, V. 3-10-5. Satapatha Braahmana.

Whatever they—individuals, communities or nation—enjoy or suffer is the consequence of their own *Karma* (action), the fruit of which they alone have to reap.

In order that *Dharma* (duty) may again be a living force helping humanity in the attainment of their aspirations it is necessary that the existing religious knowledge should be studied as a science. Such studies should be guided by an accurate knowledge of the problems of human life and a careful analysis of the human mind.

We are not to laugh or weep over the actions of men but we should simply understand them and take an account of every detail, as we do, when we conduct experiments and observations in other sciences. We should study carefully men's affection and passions such as desire, hate, anger, greed, arrogance, pity and all other disturbances of the mind. We should regard them not as vices, but as properties belonging to particular states of consciousness. They are symptoms of certain diseases. They sometimes cause intense excitement, restlessness and unconsciousness just like fever or other diseases.

Therefore, a thorough knowledge of the religious and emotional life of the people and their practices should form the background of the study of the medical student and should be a guide to him as a scientist. He has to deal with the faiths, habits and customs of the people and their relative importance according to the time and place.

Ayurveda did not therefore divide the studies of social, religious and humanitarian subjects into separate and water tight compartments but included rightly all these in the curriculum of studies of the medical student. The reader will know more of it as he proceeds in his studies.

The Advent of Satya-Yuga.

The salvation of the man does not lie in the different nations quarrelling with each other like the brutes of the jungle. The Western civilisation subordinated learning to politics. The Knowledge of the science was prostituted to serve as a handmaid of the war machine. A true *Braahmana* has to acquire knowledge for its own sake (Nishphala) (i. e.) without any idea of the fruit of such action, and should propagate that knowledge without expecting any remuneration. Adhyayana and Adhyaapaka are his legitimate duties. The ultimate study of all sciences (Darsanas) was the acquisition of Prajna—a mental flame which enables man to know God. When this Truth is learnt, the equality of all living creatures, and their brotherhood is firmly established.

Sarva Bhootastha Maatmaanam,

Sarva Bootaani Chaatmani,

Yeekshatee Yoga Yuktaatma.

Sarvatra Samadarsanah. (Geeta Ch. 6, Ver. 29).

Vidyaa Vinayasampanne,

Braahmane Gavi hasthini,

Suni Chaiva Sva paake Cha

Panditaa Sama Darsinah. (Geeta Ch. 5, Ver. 15).

"A man who as his vision equalised in all directions sees himself in all beings and sees also that all created beings are within himself. A Pandita (a learned man) is one whose vision is the same towards a Braahmana, who is endowed with knowledge and humility, as towards any other animal such as a cow or an elephant, or even a dog or a dog-eater." This state of equilibrium of the mind is obtained by a *Yogi* like *Mahaatma Gaandhi*. His real personality with his weapon of non-violence can be understood only,

when this philosophic back-ground is studied. The Science of *Ayurveda*, true to its name as the Science of life, has specialised in the subject of *Ahimsa*, which relates to the evolution of the processes of life as a whole.

“Among diverse means that exist for prolonging life, *Ahimsa*—abstention from injury (non-violence) or universal compassion is regarded as the foremost of all such means (not food). Such abstention from injuring other creatures leads to merit, which prolongs life. *Ayurveda* regards knowledge (not meat eating) as the best promoter of the nutrition of mind and body. Subjugation of the senses (not their satisfaction) is the foremost of all means for deriving happiness. A knowledge of the Supreme Soul, *Brahman*, is the foremost of all means for deriving salvation and bliss, and the practice of *Brahmacharya* (living in God but not in sex life) is the foremost of all paths leading to the attainment of happy goals,” (*Charaka, Sutra*, Ch. 30-V-15). It is only the study of this science of life (*Ayurveda*) in its true bearing as a science that would enable one to understand its hold upon the people.

Mahaatma Gaandhi stands to-day as an apostle of *Ahimsa* thus expounded in *Ayurveda* as the Sole instrument for prolonging life. He has no enemies, because he is free from partiality. He is “*Dwandwaateeta*” free from the opposite feelings of desire and hate (*Raaga and Dwesh*.) Absolute tranquility of mind prevails in him even when he is engaged in solving the most complicated problems.

“Aapooryamaanam Achalapratishtham,
Samudra maapah pravisanti yadvat,
Tadwat kaamaayam pravisanti sarve
Sa saanti maapnoti nakaama kaami. (Geeta. Ch. II V. 70)

Just as all water enters the sea, the shores of which are not transgressed although it is being filled on all sides, so also is true tranquility obtained only by that person, who is entered into by all objects of sense, without disturbing his tranquility. This tranquility cannot be obtained by one, who desires satisfaction of his senses.

He alone acquires tranquility, who performs actions, having given up all attachment and becomes desireless and who has not got mine-ness and egoism.

“Vihaaya Kaamaan Yassarvaan

Pumaanscharati Nishpruhah

Nirmamo Nirahamkaarah

Sasaanti Madhi Gachhati,

(Gita. Ch. II-71)

It does not mean that one should abandon action in order to attain tranquility. Whereas the minds of ordinary people are confused by the hope of fruit, the mind of a man, who has reached the state of perfection is not distressed by the hope of fruit. Whatever be the number of actions he has to perform, he does them remaining as peaceful as the deep sea. He does not therefore suffer from pain or happiness. *Mahaatma Gaandhi* is not a *Sanyaasin* of the mendicant type. He has a dynamic personality. He moves about in the objects of sense (i. e. in the worldly affairs), keeping his senses under control. All that he does is not for himself but for *Loka Sangraha* i. e., for the benefit of the world. He has absolute faith in the maxim “*Satya meva Jayati* :— Truth alone succeeds.” He can always see the truth without being prejudiced by any body or any action, even of his enemies. In fact, he has no enemies in the world.

Almost like a prophet of the age, *Vivekananda* declared,

that even the latest movements of Socialism or Communism would never be able to achieve their goal until and unless they took their stand on spiritual ideals. "The political systems that we are struggling for in India have been in Europe for ages. They have been tried for centuries and have been found wanting. One after another the institutions systems, and everything connected with political governments have been condemned as useless, and Europe is restless does not know where to turn. It is hopeless and perfectly useless to govern mankind with the sword. You will find that the very centres from which such ideas as government by force sprang up are the very first centres to degrade and degenerate and crumble to pieces. Europe, the centre of the manifestation of the material energy, will crumble to pieces within fifty years, if she is not mindful to change her position, to shift her ground and make spirituality the basis of her life" (Cul. Her. Vol. II. P. 597).

The re-advent of *Satya Yuga* in this world would again be ushered in by *Mahaatma Gaandhi*, whose politics are based on religion (goodness of all men). He now shines like a guiding star on the horizon of the world caught in the tempest of mutual jealousies and strife. He will be the sole representative of Hindustan in the councils of the world when peace is discussed. The modern civilization will then be thoroughly overhauled in the light of his *Vedantic* teachings.

Hindusthan to Lead the world again.

At the beginning of the world (i. e) during the last *Satya-Yuga*, there was but one class of men, when the cow of *Sanaatana Dharma* was walking on all its four legs (see Page 19; Supra) and in the coming *Satya Yuga* also all the

classes, all the religions, castes and creeds will have to go back to one Caste professing *Truth* and Non-Violence as its creed.

"This is the land from whence, spirituality and philosophy have again and again rushed out and deluged the world and this is the land from whence once more such tides must proceed in order to bring life and vigour into the decaying races of mankind. It is the same *Hindustaan* which has withstood the shocks of centuries, of hundreds of foreign invasions, of hundreds of upheavels of manners and customs. It is the same land which stands firmer than any rock in the world, with its undying vigour, indestructible life. Its life is of the same nature as the Soul, without beginning and without end-immortal, and we are the children of such a country." *

Have tremendous faith in yourselves. Have that faith, that eternal power is lodged in every soul and then, you will revive the whole of Hindustan. Be ready to sacrifice "*Yajna*," yourself, for the benefit of your race, and for the welfare of humanity. For the Hindu, life is eternal.

*"Paritraanaaya Saadhoonaam
Vinaasaayacha Dushkrutaam
Dharmasamstaapa naardhaaya,
Sambhavaami Yuge Yuge".*

May the Lord who comes again and again for the salvation of His own people bless us.

* Swaami Vivekaananda Lectures. P. 285.

† "Gobraahmanebhya Ssubhamasthu Nityam,

Lokaah Samastaali Sakhino Bhavantu".

"Peace be to the Cow, and the *Braahmana*,

Let all the worlds be happy."

Om Saantih, Saantih, Saantih.

Peace, Peace, Peace.

† The cow is symbolical of physical strength and prosperity.

The *Braahmana* is symbolical of mental strength.

CHAPTER V. History of Aayurveda.

BY

Sri Kaviraaj : M. K. MUKHARJEE, B.A., *Aayurveda Saastr i.*
CALCUTTA.

AND

Bhishagwara : D. NARAYANAROW, A.M.A.C., A.L.I.M.
MADRAS.

[CONTENTS :—Introduction—Periods in the History of
Aayurveda – Vaidika Yuga – Samhita Yuga – Baudha Yuga –
Pauraanika Yuga – Mahammadeeya Yuga – Aangla Yuga –
Conclusion.]

Introduction.

Being as old as the *Vedas*, the history of *Aayurveda* takes us back to the remotest antiquity. But, *Aayurveda* is not a science, of mere antiquarian interest. It is a science as well as an art, original in itself and based upon the practical experience and careful methods of investigation pursued by the great sages of the by-gone times, who were endowed with intuition. Its survival through all these ages inspite of many other systems of medicine imported from outside and competing with it, is in itself a standing testimony and a positive test for its efficacy and the intrinsic strength of its foundations.

It is lamentable that the History of *Aayurveda* has not been prescribed as a subject in the curriculum of studies even for the *Aacharya* and the High Proficiency examinations. The knowledge in the science of *Aayurveda* cannot be complete and entire without a knowledge of its history. Further, it is regrettable to find that a majority of the *Aayurvedists* are not

even acquainted with the names of the ancient *Aayurvedic* authors and their compilations. The founders and builders of this great System of Medicine were so humble, and selfless in their endeavours as not to mention anything about themselves in their compendiums, a feature which is characteristic with all the ancient Hindu sages. The times in which these great benefactors of mankind flourished and wrote their *Samhitas* are lost to us in dim obscurity and little or nothing is known about the incidents of their lives except that their names have been quoted here and there by commentators of the latter times.

Under these circumstances, a complete history of *Aayurveda* which has no beginning or an end (*Anaali*) cannot be attempted in a few pages and in a single chapter as this.

Therefore, in the present chapter we propose to present a bird's eye view of the historical domain of *Aayurveda* commencing from the earliest times down to the present day. In this connection the honoured names of Sir P. C. Ray, Thakore Saheb of Gondal, Dr. G. N. Mukharjee and Dr. C. Mutha may gratefully be remembered.

Periods in the History of Aayurveda.

The History of *Aayurveda* may conveniently be described in the following periods or Yugas viz., :—

1. Vaidika Yuga, 2. Sambhita Yuga, 3. Baudha Yuga;
4. Pauraanika Yuga, 5. Mahammadeeya Yuga and 6. Aangli Yuga.

I

The Vaidika Yuga.

This period extends from the pre-historic times upto 2500 B. C.

[Contents:—Vedas—Aayurveda an Upaveda—Aayurveda in the Vedas—Reference to Tridhaatus—Anatomical references in

the Vedas-Reference to the process of metabolism-Bacteriology-Yukti Vyapaasraya or medical treatment. Soma, the king of plants-List of a few drugs in the Vedas-Takman, the malarial fever-Light and Chromo treatments-Hydrotherapy. Surgery in the Vedas-Midwifery-Daivavyapaasraya Chikitsa or Treatment by Faith-Medicine as a profession in the Vedic times-Three classes of Physicians. Aayurveda not separated from the Vedas.]

Vedaas.

Hindu Scriptures are generally classified into two classes viz. *Srutis* and *Smritis*. Literally, by *Sruti* is meant what has been heard. Our ancient Rishis, It is belived to have been heard as revelation from Brahma and the *Rishies* thus inspired have left a record of those truths for our benefit. The *Rishis* are therefore called Seers or Sages. These records are called the *Vedaas*. These stand primary in point of authority while *Smritis* are secondary which simply amplify the principles laid down in the former (*Vedaas*). The *Vedaas* are four in number viz., 1. the *Rig Veda*, 2. the *Yajurveda*, 3. the *Saama Veda* and 4. the *Atharva Veda* of which the *Rig Ved* is the earliest and *Atharva Veda* the latest. These are considered to be the oldest books in the library of man. As no body knows when and by whom they were compiled, they are considered as *Apaurusheya* (not man-made) and propounded by *Brahmaa*, Himself,

Aayurveda an Upa-veda.

Though *Aayurveda* has been described as the essence of all the *Vedaas* in *Puranaas* (*Brahma Vaivart*) and as a fifth *Veda* by sage *Kasyapa*, it is also traditionally believed that it is an *Upa-Veda*. It is thus as authoritative as the *Vedas*.

Every *Veda* has an *Up-Veda* of its own; *Aayurveda* being the *Upa Veda* of *Rig Veda*, Archery of *Yajurveda*, the science of Music of *Saamaveda* and the science of Surgery of *Atharva Veda*.

"Sarveshameva Vedaanaam upavedaa bhavanti,
Rigvedasyaayurveda upavedah.
Yajurvedasya Dhanurveda upavedah,
Saamavedasya, Gaandharvaveda upavedah,
Atharvavedasya, Sastrasastraani" Charana Vyuha.

Aayurveda is regarded as the *Upa-Veda* of *Atharvaveda* also." *Iha khalu Aayurvedanaama Yadupaangamadharvavedasya.*", (Sus Soo, Chap. I).

Charaka also considers *Atharvaveda* as the basis of *Aayurveda*. (Soo. Chap. 30).

Whether *Aayurveda* forms a sub-veda or an auxiliary one to *Rig Veda* or to *Atharvaveda*, it matters little as the topics relating to it (*Aayurveda*) are met with freely scattered here and there in varying measures in all the *Vedaas* though none of the *Vedaas* contain the word *Aayurveda* through out their vast bodies.

Aayurveda in the Vedaas.

What ever may be the origin of the *Vedas* whether they owe their origin to divinity or to humanity, they occupy an unique position of their own and enlighten us upon the early habits and customs of the people and also of the medical Science of our nation during the pre-Budhistic times. In fact, of the *Vedaas* the *Rig* and the *Atharva Vedaas* are the preponderating sources of the fundamental principles of *Aayurveda*. But it is not an easy task to ferret out the materials of *Aayurveda* lying scattered in the vast body of the *Vadic* literature.

ature. We will, however, present the theories of *Ayurveda* and its principles of treatment culled from the different places of the *Vedaas* to give an enraptured glimpse and insight into the insight of the science. One cannot but admire from these the insight of the ancient *Rishis* their keen and careful observation of nature and its elaborate application upon the health of man.

"In the *Vedaas*, the medical knowledge is often said to be derived from the actions of animals. In the *Atharva Veda*, we find certain animals acting as teachers of medicine. The boar, ichneumon, serpents, eagles, falcons and birds, oxen, kine, goats, sheep and wild animals are mentioned as versed in the qualities of medicinal plants." (VIII 7-23-26—History of Indian Medicine, Vol. I. P. 72. G. N. M.).

Reference to Tridhaatus.

A reference to the theory of *Tridhaatus* is met with in *Rig-Veda* which runs as follows:—

*Trirno aswinaa divyaani bheshajaa trih Paardhivaani
trirudatta madbhyah.*

*Omaanam sam yornamakaaya soonave tridhaatu sarma
vahatam subhaspatee" Rig. Ve. 1-7-46.*

The equilibrium of the said three *Dhatus* means health or happiness, whereas their de-rangement constitutes disease or distress,

Saayanaachaarya the famous commentator of the *Vedaas* has interpreted the *Tri Dhaatu* as *Vaata*, *Pitta*, and *Slekshma* and *Stated* that their equipose is happiness (*Sarma*).

Anatomical References.

Practical surgery requires a good knowledge of practical anatomy. There can be no doubt that the ancient *Aryan*

Rishis possessed a good knowledge of anatomy of different parts of the body. They were also acquainted with the anatomy of at least certain animals such as the goat, and horse, that they often used at the sacrificial functions. This afforded excellent materials for a knowledge of comparative anatomy. They recognised the various organs of the body and gave different names to the different organs. Even in the earliest records as the *Rigveda*, we come across with the names of certain internal organs as the heart, intestines etc., An investigation into the *Aranyaka Brahmana of Yajurveda* will give one the main traces of anatomy as mentioned in the surgical science (3-9-30). A few referenes to anatomical terms occuring in the *Vedaas* are given below.

Vedic Name		Reference.
Antra	(Intestines)	Ath 2-33-3
Bhanishtu ?	(Prostate gland)	Ath 10-9-17
Dhamani	(Artery & also Nerve)	Ath 1-17-13
Gaveeni	(Ureters)	1-3-6
Gudaa	(Rectum)	Ath 10-9-1
Hridaya	(Heart)	Ath 2-29-6
Kaphodau	(Lungs)	Ath 10-2-4
Kloman	(Tracheo bronchial tree & Pancreas)	Ath 10-8-12
Kuksbi	(Stomach and intestines)	Rig 3-36-8
Mastishka	(Brain)	Ath 10-2-8
Matasna, Vrikka	(Kidneys)	Ath { 10-2-4 9-12-13
Manya	(Neck)	"
Naadi	(Nerve & also artery)	Ath 10-7-15
Pesani	(Muscle)	Ath 10-2-1
Pleehan	(Spleen)	Ath 2-33-3
Pureetat	(Peri cardium)	Ath 9-12-11

Vedic Name		Reference.	
Snaayu	(Sinews)	Ath	1-10-11
Siraa	(Veins)	Ath	1-17-3
Udara	(Stomach)	Rig	3-33-8
Vasti	(Bladder)	Ath	2-33-3
Vrishana	(Testis)	Ath	9-12-13
Yakrit	(Liver)	Ath	2-33-3
Apaan	* (Liver) ?	Gop	Brah. 3
Athara kantha	(Base of the mouth)	Sukl	Yazur 24
Jaambila	(Stomach)		"
Sthoola Guda	(Upper rectum)		"
Sushka Kantha	(Top of the mouth)		"
Vaikarta	(Liver)	Atr	Brah.
Hrida yaupasa	(Lungs)		"
Kaakud	(Pharynx)	Gop.	Brah 3

Atharva Veda in its Tenth Kanda contains a special hymn on the creation of *Purusha* in which several parts of the skeleton were enumerated orderly from foot to head.

Paarsni (Heel), Gulpha (Ankle bone), Anguli (Digit), Uchlakha (Long bones), Pratistha (Base), Asteevat or Jaanu (Knee cap), Jangha (Leg bones) Sroni (Pelvic cavity), Uru (Thighbone), Uras (Breast bone), Greeva (Wind pipe), Stana (Ribs), Kaphoda (Shoulder blade), Skandha (Neck bones) Prista (Backbones). Amsa (Color bone), Lalaata, (Brow), Kakaatika. (Central facial bone) Kaapala (Cranium), Hanu (Jaw) † (Hoernle)

According to *Satapatha Brahmana* the number of bones in man is 360 "*Shashtis cha ha vai threeni Purushasya asthaani*" (10-5-4).

That the body is made up of the five *Bhootas* was conceived by the *Aryans* as early as the *Vedic* period, a fact

* Sri Goldbole Saastri, Bombay. † Medicine of Ancient India.

which is evident from the following hymn addressed to *Agni* thus:—

“Let his eye go to the sun, his breath to the wind and to the sky and to earth according to nature of the several parts of the body.” Rig (16 3. 4. 5. 6. 7).

The Process of Metabolism.

In *Chaandogya Braahmana of Saama Veda* (Shashta prapaata), we find references to the process of digestion, assimilation and Metabolism and even the nourishment of senses described in the form of a discourse between *Swetaketu* and his father.

“Anna masisan thredhaa vidheeyatelasya

Yah sthavishto dhaatu stha pureesham bhavati

Yo madhyama stan maamsayo nishta sthan manah”

“The *Anna* (*Paardhiva*—Solid food) that is eaten is divided into three parts. The gross part becomes the *Pureesha* (faeces) the middle part becomes *Maamsa* (flesh) and the subtle part becomes the *Manas* (Mind)

“Aapah peeta nthredhaa vidheeyante taasaam

Yah sthavishto dhaatu sthan mootram bhavati

Yo madhyama stha lohita yo nishta ssa praana”

The *Aap* (liquid food) that is drunk is divided into three parts. The gross becomes *Mootra* (urine), the middle one becomes *Lohita* (blood) and the subtle one becomes *Praana*.

“Tejo sitan tredhaa vidheeyate tasya yah

Sthavi hto dhaatus tadasthi bhavati yo

Madhyama ssa majja yo nishta saa vaak”

The *Tejobhoota* food (consisting of ghee, oils etc) is

divided into three parts. The gross portion becomes *Asthi*, the middle one becomes *Majja* (marrow) and the subtle portion becomes *Vaak* (speech).

Mind is constituted of *Anna*, (Solid), *Praana* is constituted of *Aap* and *Vaak* is constituted of *Tejas*.

When his father told *Swetaketu* in this manner and when *Swetaketu* doubted its truth, his father asked him not to take any solid food for fifteen days but only to drink water because *Praana* is nourished by water and that if he did not drink water, *Praana* will not survive. *Swetaketu* did accordingly and approached his father. His father asked him to repeat the *Vedaas* that he was studying. *Swetaketu* replied that he could not repeat. The father said "out of the sixteen *Kalaas* that make your mind fifteen are exhausted. Just as a spark of fire cannot ignite a big log of wood, so also a small spark of life cannot illuminate the knowledge of the *Vedaas*, so that you may remember them. Therefore go and eat. Then you can repeat the *Vedaas*" He did accordingly. Just as a spark of fire is enlarged by applying a few bits of straw to it so also the spark of life that is only one sixteenth portion in him is brightened by the food consumed by him.

Thus it is demonstrated that *Manas* is constituted of *Anna* (*Pridhvi*). *Praana* is constituted of *Aap* and *Vaak* is constituted of *Tejas*. *Tejas* is *Kaanti*. It is *Balam*. *Balam* is *Ojas*. All these depend upon the strength derived from the assimilated food (Cf. Ch. Su. 30)

This is also an example to illustrate that the more rarified an element is, the more powerful is its kinetic action and the more gross an element is, the less powerful is its action. *Pridhvi* contributes to the grosser part of the body

-the seven *Dhaatus*. *Aap* and *Tejas* contribute respectively to the finer parts viz. *Manas*, *Praana*, *Janana*.

References to Bacteriology.

We find in the Vedic mantras that great stress has been laid on the harm done by krimis or worms and microbes. These have been described as *Drista* (visible) and *Adrista* (invisible). They are said to cause diseases. To corroborate the above the following quotations may be cited ;—

"We kill the krimis ;—Visible and invisible of the *Alagandu* ? and of the *Shaleena* varieties". (Ath. II-31-2).

"We kill the krimis which inhabit the bowel, the chest and the head which find their way into these parts through various channels". (Ibid-iv).

"We kill the krimis that are to be found in the hills, the forests, the plants, the lower animals and water, which have entered our body (through wounds and through our food and water-*Saayana Bhaashya*) ; we kill their very birth". (Ibid-V).

The Sun's rays have been recognised as effective destroyers of these germs.

"The rising sun kills with his rays, the germs that pervade the world, the setting sun does the same. (Ath-II-33-1).

"*Antarhitasareeraah manushyopadrava kaarinah gana vishoah Bhootah uchante*" (*Sukla Yajurvedaantargata Rudra*.)

"Particular groups of minute being which do harm to men are called *Bhootas*"

The *Bhootas* of the *Vedas* are nothing but *Krimis*—visible or invisible which do harm to men.

Sex differentiation in Parasites.

"*Sarveshaam cha krimeenaam Sarvaa saam cha Krimeenaam Chinadyasmanaa siro dahaamyagni naam mukham*."

Ito Raaja krimeenaa mutaishaam sthapadi rhalah.

Hato hata maataa krimirhata bhraataa hata swasaa."

In these two *Sritis*, the sex of the parasite is referred to. Both male and female parasites are to be destroyed. It was considered necessary to kill the king (Raaja) of parasites as also the queen so that the whole family including the father, the mother, male and female children may all be destroyed. The drug used for killing the parasites appears to be (*Agni-Plumbago Rosia*). *

Yukti Vyapaasraya-Rational treatment- in the Vedaas.

The mention of Mantras (charms) in abundance in connection with the cure of diseases, does not mean that the medicinal properties of drugs were un-known to the physicians of this period. The mention of one hundred and one thousand medicines is remarkable. Many hymns describing the varieties of herbs and medicines are found in the *Vedas* "*Satanle raajan Bhishajah sahasra urveem gabheeraa sumatiste.*" (*Rig Veda* 1-4-29). Numerous such other references are to be met with as one passes through the vedic literature.

The knowledge of Materia Medica of the *Vedic* Physician, is admirable when nothing about a systematised Medicine was heard of in other countries. Classification of plants according to their external appearance as well as their Medicinal virtues was also attempted (R. V. 10. 97)

We find in *Rig Veda* even references to cryptogamous or flowerless plants and phanerogamous or flowering plants

* For further information, the reader is, referred to "Vedic Parasitology" of Sri Pandit Pandrangi Subbaraya Sarma, Cocanada, published in the issues of the Journal of Ayurveda Calcutta, of June, July and August, 1936.

which refer to the knowledge of the Botany attained by the physicians of this period.

"Yaahphalineeryaa aphalaa apushpaa yaascha Pushpineeh (X-97-14). Oshadheeh prati medadhvam pushpavteeh prasoovareelt" (X-91 3)

A skillful physician has been defined as "One who lives in a place abounding with the medicinal plants and who assiduously devotes his time to the acquisition of knowledge.

"Yatraushadhih samagmata raa anah samitaviva viprah sa uchyate Bhishag rakshohaamivachataanah". (R. V. 10-7-6)

The importance attached to the medicinal herbs may well be inferred from this.

Not only herbs but certain minerals as iron, gold etc., have also been mentioned in the *Vedas*. Such unmistakably clear descriptions give a direct proof that the *Rishis* of old had discovered the properties of minerals. They knew also their actions and the toxic effects. If the belief persists that the genesis of metallic treatment of diseases belongs to the Taantric age only, the false obsession, that it was absolutely unknown to the ancient *Aayurvedists* should be discarded on the strength of these in-contestable proofs. Many *rasa* preparations have been attributed to the *Vedic Gods*.

Some Drugs and their uses in the Vedas.

We give below a few references to drugs and the diseases in which they are recommended in the *Vedas*. They are very interesting and give us important hints concerning their therapeutic value, part of which is evidently forgotten at the present day. *Atharva Veda* mentions *Rajani* in the cure of jaundice and speaks of *Kustam* as second to none in curing

leprosy. *Kustam* has been described next to *Soma* in curing diseases. Certain drugs as *Jangida* (*Apaamaarga* ?) etc., have been referred, the identification of which is doubtful. *Rig Veda* mentions *Haritala* (B-1-50) in connection with the cure of jaundice. *Suparna*, *Aasuri*, *Suroopa*, *Syaama* (*Bhringaraaja*) in skin diseases (1-12-1-4); *Prisniparni* in abortions and the ailments of blood (2-25-1-4); *Harina sringa* in *Kshaya*, leprosy and *Apasmaara* (3-7-1-3); *Sataavari* and *Doorvas* as *Rasaayana* (3-11-1-8); *Rohini* in fractures (4-12-1-7); *Sahadevi* and *Apaamaarga* in relieving thirst (4-17-1-8); *Apaamaarga* as tooth brush (7-61-1-3); *Kushtam* in *Raajayakshma*, leprosy, material fevers and as an universal remedy (5-4-1-10); fumigation of the same in malarial fevers (17-39-1-10). *Jangida* in *Asmari*, *Vishkandham* (a Vaata disease), malaria, *Swrtra*, *Dadru*, *Faamaa* etc. (19-39-1-5); *Varana* in *Yakshma* (6-85-1-3); *Pippali* in *Vaata Vyaadhis* (6-109-1-3); *Guggulu* as fumigation in *Yakshma* (19-36-1-3); *Ajasruni* and *Guggulu* in diseases that spread through water and air; *Aswalha*, *Nyagrodha*, *Sikhandi* etc. in all *Prasaarni* (*Saamkramika*-contagious) rogas; (4-36-1-12); *Brahmana* (a kind of herb) as an antitoxic (4-6-1-8); *Madhuka* (a climbing plant) as an antitoxic in snake poison (7-56-1-8) are among some of the *Oshadhis* that are mentioned in the *Vedas*. (For a list of diseases in *Atharvaveda* see page 47).

Soma the King of Plants.

The plant, *Soma* has been praised as the elixir of life or *Amrita* (Rig-B-2-2) and was considered as the king of plants. The *Rigvedic Aaryans* believed that by drinking the juice of the plant, they could conquer death. (*Apaama Soma amritaa abhoova*). The whole of the ninth Mandala of the *Rig Veda* teems with the description of the preparation of *Soma* in different varieties and the apparatus used in the methods, filters, vessels etc. which all have a historical importance in connection with medicine.

A list of drugs in the Vedas.

The names of a few more drugs that have been incidentally referred in the *Vedas* are given below in addition to those mentioded above.

Aamla, Askni * (Neelini), Aswagandha, Arundhati (Laaksha), Anjana (Neelanjana), Bilya, Kaanda Visha, Karanja, Khadira, Krishna, Kumuda, Palaasa, Paatha, Plaaksha, Parni, Priyangu, Traayamaana, Trapu (tin) etc.

Takman, the Malarial fever.

But the chapter will be incomplete without a special reference to Atharvan's *Takman*, which makes us believe that the ravaging fever, Malaria of today was known to the age of this *Veda* in entirety. *Takman* resembles modern Malaria in factors of causation, signs and symptoms, complications and types. Shivering, burning sensation etc., are found as the symptoms for *Takman*. Even jaundice has been referred to as one of the complications of *Takman*. *Takman* originally ravaged *Gandhaara*, *Mrijabat*, *Anga* and *Magadha* and its original habitants are those of the *Mahaurasas*, *Mujavants*, and *Baahlikas*. There are several hymns in the *Atharva Veda* against *Takman*, the man eating monster. We find *Kushtam* (*Costus Arabicus*) extolled as a febrifuge in *Takman*. The sages had thoroughly studied the disease in all its aspects.

References to Light and Chromotherapy.

To the *Rig Vedic Aaryans*, the sun was a great physician. They believed health and ill health where under his control "*Aarogyam Bhaaskaraadichyet*". He is prayed for the cure of

* The late Sri Kompella Chenchu Ramaiah Garu of Kaalahasti mentioned that Neelini—Indigo was mentioned in the Vedas as a cure for leucoderma and since then I used it with considerable benefit in leucoderma. A. L.

heart diseases and jaundice (See page 90). He is considered to be the greatest purifier.

"Yenaa Paavaka chakshasaa bhuranyantam janaa anutwam varuna vasyasi", (Rig. Ved. 1-7-6)

The sun was considered to be the infuser of energy into all creatures. "The sun illuminates the atmosphere and all the regions of the earth, whose golden arms are stretched out to bless and infuse energy into all creatures. (R. V. 11-38-2)

He is considered to be the Lord of the vivifying power and nourisher. (Rig Veda IV-53,3)

For the germicidal action of Sun's rays see under Bacteriology.

Hydrotherapy.

That transparent water is beneficial and conduces to the excellence of complexion and increase of vigour is mentioned in numerous mantras. Water was considered to possess disinfectant qualities.

"Aapo hi shla mayo bhuvasthaana oorje dadhaatana" etc. is a familiar mantra of the daily prayer, meant to purify the water dedicated to the Supreme Being.

"Inside the waters is Amrita. There is medicine in the waters. Therefore may the *Devaas* make haste to praise the glory of the waters".

"Apsvantar amritamapsu bhesha ja mapamuta"

Prasasta ye devaa vaajnaah". (Rig 1-23-19)

Soma has told me that the waters contain all the medicaments. That *Agni* who is the benefactor of the Universe is also contained in the waters. Therefore the waters contain all the medicaments".

*Apān me Soma abravee dantar visvaani bhe-hajaa:
Agnincha vi-sva sambhuva maapa-scha vi-sva bhe-shajeek"
(Rig-I-Anu-5-Sut-6-Hys-19-23).*

Surgery.

The *Aswini Kumara*s were the celestial physicians and surgeons, who were extolled in many hymns for their cures of diseases and feats of surgery. The hymns addressed to *Aswini* throw a special light on the history of surgery and Medicine of India. They were experts in orthopaedic surgery. They were able to make and fit artificial legs made of iron and were experts in the treatment of eye diseases. They made an artificial leg to *Vishpala* and fitted it when she lost it in a battle. They were addressed as "*Madhu Vidya Vishaaradaa*" i. e. capable of connecting the severed head to the trunk and giving life.

Rasaayana Chikitsa was also developed as a special branch of medicine. They (*Aswini*s) have been credited as having rejuvenated old *Chyavana Rishi*, and as having cured the blindness and lameness of *Paravraja*.

Midwifery.

Obstetrics and gynaecology and especially obstetrics were handed over to women specialists. *Susha*, *Vishkala*, *Sini-vaali*, *Gangu*, *Kuhu Saraswati*, *Anumati*, *Saavitri* etc. are among the mid-wives of the *Ayurvedic* literature, names to conjure with, who by their skill, technic and success secured a mention of their names in *Atharvaveda*.

During labour, dorsal position was favoured (*Rig Veda* 61-3). For asphyxia neonatorum, artificial respiration was resorted to (*Sp. XI-8-36*). *

*For further particulars the reader is referred to "Midwifery in Ancient India" by Dr. G. N. Mukherjee published in the 1931, 1932 Volumes of the Journal of Ayurveda, Calcutta.

Laivavyapaasraya Chikitsa-Treatment by Faith.

From the descriptions, we come across in the *Vedas*, we find that *Daivavyapaasraya Chikitsa* was also prevalent, Vedic Sages used to call in the assistance of Gods, in the form of prayers, who were believed to possess a knowledge of medicines. Attempts at cure of disease were made through spells, amulets and incantations. Hymns relating to medicine are found in abundance addressed to Indra and other celestials and even to *Vanaspatis*.

Spells and Amulets, (Mantras and Manis)

In *Atharva Veda* special Mantras and special Manis-amulets have been prescribed for special diseases. Thus, we find a Mantra against jaundice (Book-I-22), against leprosy (B-1-23 and 24), a water cure Mantra in which the medicinal properties of water have been described (B-2-3), against hereditary (*Kshetreeya*) diseases, a Mantra against dangerous diseases, Mantra against consumption (B 2-34. B-6-14, B. 9 8), against cough and even to promote growth of hair (B. 6-21-30), to remove sterility from women and ensure birth of boys (B. 3-23, B. 6-11), Mantra to ensure conception (B. 6-47), to facilitate child birth (B. 6-81), Mantra against fiends that cause abortion (B. 2-25), against poisons and to banish various diseases are met with. Thus we find in the *Vedas* several diseases with remedies in herbs, charms and amulets in conjunction with incantations.

The efficacy of the Mantras depends upon the power of the mind of the reciter. In certain cases, even a person of mediocre or poor capacity may be blessed with Mantra Sakti by the grace of the competent Guru. Regarding efficacy of *Mantras* and the science of *Mantra Saastra*, the reader is

referred to Sir John Woodroff's "Serpent Power," "The world as Mind and Mind as Power" and the Telugu Edition of Darsanas by Dr. A. Lakshmi pathi under Mantra Yoga and Kundalini Yoga.

Essence of this Saastra is to bring under control of the operator certain portion of the eternal and universal energy into a limited sphere and make it operate at the will of the operator.

Medicine as a Profession.

Among professionals, *Rig Veda* mentions physicians also. In the *Rig Veda*, a physician in search of patients, is mentioned by which we can infer that during the *Vedic* period there was also some sort of advertisement and competition among physicians *Rudra* has been in many places addressed as physician of physicians (*Bhishaktama Bhishak*), who carried medicines with him. The physicians were amply paid in recompense for their services and even were presented with horses, cows and dress etc., (*Rig. 10-97-4*).

But from *Susruta Samhita* we find, that the status of medical men in society was not high and was considered to be inferior religiously and that from the time the *Aswinis* gained success in replacing the head of *Yajnapurusha* and thereby admitted to have a share of sacrificial food, the status of the medical profession was elevated. (*Sus-Soo-ch-I*).

The physician was identified with Gods and when relief from disease was obtained, the *Aswinis* were praised. Hymns also, were sung eulogising the properties of drugs when such relief was obtained.

In the earlier epochs of the *Vedaas*, Universal deities as the *Aswinis*, *Rudra*, *Indra* etc., were in relation with disease

and medicine. Later on medical functions were attributed to definite deities.

Three Classes of Practitioners.

During this period, three classes of medical practitioners existed viz., *Salya Vaidyaas* (Surgeons), *Bhishaks* (Physicians), and *Bhishak Atharvans* (faith curers).

Āyurveda and the Vedas.

We have at present no medical or surgical books belonging to that period. Special treatises must to have been composed independantly on the science of *Āyurveda*. They must have existed because the science is already so elaborate.
(Sus. Su. Ch. 1)

"As one proceeds through the oceanic studies of the *Vedaas*, the eye is regaled thus with the refreshing spectacles of researches in Anatomical, Physiological knowledge, Eitology Symptomatology, Materia Medica, Surgery, Midwifery, Embryology etc., even in those days of indetermirable antiquity. Many modern theories will also greet the eye of the laborious reader there as new orientations of the old ones which had long long ago dawned upon the unblurred minds of the ancient sages" as Pardy Lukis rightly observed, "There is no doubt whatever that their ancestors (Indians) knew ages ago many things which are now a days brought forward as new discoveries".

The physicians of the *Vedic* times possessed a knowledge of the various branches of medicine.

The positive knowledge of medicines was assiduously acquired and used by the physians while the surgeons afforded relief by the use of instruments and peace of mind

was secured by the aid of super-human means viz., *Yoga and Bhakti*, and by the invocation of Gods.

Usually when the westerners describe the *Vedic* period, they speak of primitive times. In fact, Aaryan civilization was at its highest during the vedic period. Simple living and high thinking certainly does not mean primitive civilization.

In brief so much for the *Vedic* period and *Aayurveda* in the *Vedas*. What we have summarised is only a bird's eye view of the vast fields covered by the *Vedas* in the history of *Ayurveda* upto 2,500 B. C.

II

The Samhita Yuga or the Period of Compilations.

[CONTENTS:—Samhita yuga - Traditional genesis of Aayurveda—Teachers of Aayurveda—Geneology of the teachers of Aayurveda—Aayurveda is eternal—Aayurveda is most auspicious - The original bulk of Aayurveda - Angas or Sthanas of Aayurveda - Development of Chikitsa into eight departments - A brief list of Aayurvedic works of this period—works on Kaaya Chikitsa - works on Salya Chikitsa—works on Saalaakya Chikitsa - works on Bhoota Vidya—works on Kaumaara bhrutya - works on Agada Chikitsa—works on Rasaayana Chikitsa—works on Vaajcekarana Chikitsa—works on Pasu Chikitsa—Fundamental Theories—Paancha bhoutic theory—Tri-Dhaatu Theory Theory of Prakritis—Anatomy—Practice of human dissection—The doctrine of Marmas—Classification of the tissues of the body—Embryology—Physiology - of Digestion - of Circulation - of Respiration - Nervous

system - Materia medica - Theory of the five inherent properties of a substance-Classification of drugs-Pharmacy-Bacteriology- Diagnosis - Antiseptics - Anaesthetics - Surgery-Midwifery - Medicine - Epidemiology Principles of Hygiene-Euginics-Selection and initiation of a student-Pratigna (Oath) taking-Practical training-Medical registration-Medical ethics-Medical conferences Different classes of Physicians-Condensation of quacks (Kuvaidyas)-Description of a hospital building-Description of labour room-Practice of medicine in relation to Varna Dharma-Development of medicine in South India-Agasthya Sampradaaya.]

Samhitayuga.

This period extends from 2,500 B. C. to 500 B. C. and marks the highest development of the *Aaryan* literature on all sides. It is believed that during this period the two great epics viz., The *Raamaayana* and the *Mahaabhaarata* have been compiled. During the later part of this period, the six orthodox systems of *Hindu* philosophy popularly known as the *Shaddarsanas* developed side by side and took the form in which they are found to-day. The *Aayurvedic Rishis* adopting some of the *Siddhaantas* of these *Darsanas* suitable for their science gave a definite and a scientific shape to *Thridhaatu Siddhanta* around which the whole web of *Aayurveda* was woven. The Sootras and Vedaangas were also composed during this period and as such this period is generally known as the Sootra Yuga also. (See page 94-95)

These *Rishis* or *Aachaaryas* systematised and generalised the science of *Aayurveda* by recording the observations already made by their predecessors during the *Vedic* age and also by them as well. Most of the names of these *Aachaaryas* are referred to by *Paanini*, *Kaatyayana* and *Patanjali*. These

Aachaaryas created a bulky medical literature by compiling original *Samhitas* bearing their names. These *Samhitas* present a picture of the positive investigation and the scientific development of Hindu Medicine in its various branches and show us how our *Rishis* were acquainted with scientific methods of investigation, accurate observation, critical examination and generalisation of the effects of nature on the health of man. Various powerful educational institutions were established during this period.

It was during this glorious period, the *Rishis* met in conference to find out means for the alleviation of the diseases as chronicled in *Charaka* (Sootra Chap. I) As no definite data are available, it is not possible to fix the dates of these *Rishis* and the time of these eventful conferences.

Traditional Genesis of Aayurveda.

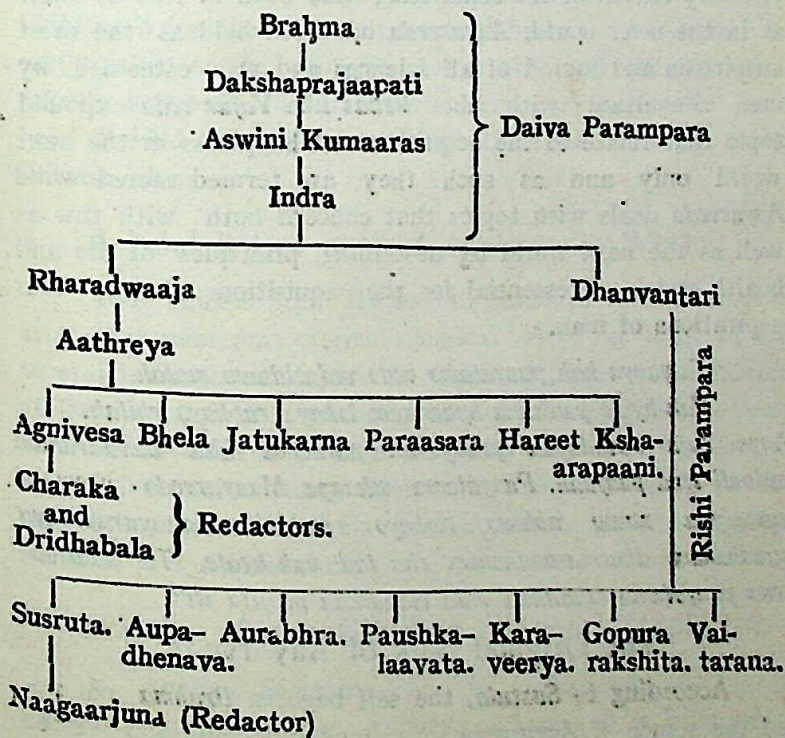
The origin of medicine has been attributed to their Gods by all the civilised nations of the ancient world. It was referred by the *Aaryans* to *Brahma* the supreme creator of the Universe, by the Greeks to Appolo, by the Egyptians to Thot, by the Chinese to Shen Nung etc., The legends relating to the origin and progress of *Aayurveda* and the way in which it has been handed down from the Gods to *Sages* are of interest. These are briefly stated in the extant works of *Charaka*, *Susruta* etc.,

Teachers of Aayurveda..

Brahma, the creator of the universe, evolved *Aayurveda* by meditation and imparted it to *Prajaapati*. He taught it to the twin-gods, *Aswini Kumaaras* who became the divine physicians. From *Aswinis*, *Indra*, the celestial ruler learnt it

who in turn taught it to many *Rishis* who approached him. Of the pupils of Indra two viz., sage *Bharadwaaja*, and King *Divodaasa* of Benares distinguished themselves as prominent instructors and originators of the School of Physicians and the School of Surgeons respectively. Thus the Science of *Aayurveda*, has been brought into this world from *Brahma* through the celestials. (See page-59 also)

Geneology of the Teachers of Aayurveda.



Ayurveda is Eternal-Nityam.

Apart from the traditional view, Aayurveda (the knowledge of life) in virtue of its having no beginning (*Anaaditvaat*), of its indicating those truths which arise from the very nature of living being (*Swabhaava Samsiddhi Lakshanaatvaat*), and of the eternal nature of the actions of existing things about which it deals (*Bhaavu Swabhaava Nityatvaat*) is considered to be an eternal Science.

Aayurveda, the most auspicious-Punyatama.

By reason of its benefitting man both in this as well as in the next world, *Aayurveda* has been held as the most auspicious and sacred of all sciences and was esteemed by men conversant with the *Vedas* like *Yajur veda* expound topic that relate to the acquisition of happiness in the next world only and as such they are termed sacred while *Aayurveda* deals with topics that concern both with this as well as the next world by describing principles of life and health which are essential for the acquisition of the four aspirations of man.

"Ta:yaayushah punyatamo vedo vedavidaam matah.

Vak-hyate yanmanu-shyaanaam lokaya rubhaya rhitah.

Anye Yajurvedaadayah praayasah paraloka hita mevaardham vadanti tena punyaah. Punyatama schaaya Maayurvedo yasmaan manu-yaa naau ubhaya rlokayo ryaddhita maayuraarogya saadhanam dharmasaadhanam cha tad vak-hyate. Te naatisa-yena punyatama sthaddhaa veda vidaancha pojjita iti".

The Original Bulk of Aayurveda.

According to *Susruta*, the self begotten *Brahma* composed the science of *Aayurveda* in a hundred thousand verses divided into a thousand chapters. (Su. Soo Chap 1).

Sthaanas of Aayurveda.

Aayurveda consists of many Sthaanas or Anagas (departments) viz., Sootra, Saareera, Nidaana, Chikitsa Vimaana, Siddhi, Kalpa etc. The Aachaaryas compiled all their Samhitas in accordance with these Sthaanas which are the chief Angas of Aayurveda.

Development of Chikitsa into Eight branches.

Even before the time of the Aachaaryas, Chikitsaanga of Aayurveda had developed into eight different special branches which are popularly known as the Ashtaangas. Chikitsa being the most important Sthaana of Aayurveda is easily taken as the whole of Aayurveda and thereby mistakenly supposed that the whole science of Aayurveda had been divided into eight branches; Ashtaanga always mean Chikitsa alone.

A brief list of ancient Aayurvedic Works.

It is evident from the extant *Samhitas* and commentaries that numerous original classical works on each of the several branches of *Aayurveda* (Chikitsa) might have existed at least until 8 or 9 centuries ago. A classified list of some of these *Samhitas* is given below. This cannot be taken as exhaustive one, as many have to be unearthed still. In this connection an All India general search into the different libraries is a desideratum.

Works on Kaaya Chikitsa (General Medicine).

1. *Agnivesa Samhita*:—This is considered to be the greatest work of the *Aathreya* school and is believed to

have been written by *Agnivesa*. The present day *Charaka Samhita* is identified with it. It has been renovated by Maharshi *Charaka* and subsequently by *Dridhabala* a Kashmiri Pandit.

It is opined that "*Anjana Nidaana*" was compiled by *Agnivesa*. As not a single quotation from this book is found in the commentaries of *Chakrapaani*, *Vijayarakshita*, *Srikantha Datta* etc. and as the language does not coincide with the ancient Sanskrit style, it is believed to be compiled by some author of the same name at a very later date. The subject has been dealt in a masterly way so as to be easily understandable even to a beginner though in a terse language.

2. *Bhela Samhita*:—This work was found in an incomplete condition in the famous Tanjore Library and though mutilated, has been published by the Calcutta University. Quotations from this book are freely found in the commentaries of *Vijayarakshita*, *Sivadasa* and others. Many are of opinion that *Bhela Samhita* and *Bhaaluki Tantra* are but two different names of the same book. But *Dalhanaachaarya* in his commentary on *Susruta Samhita* quotes both of them in the same context and as such this view cannot be tenable. *Bhaaluki Tantra* seems to be chiefly a work on Surgery (see infra for *Bhaaluki Samhita* under works on *Salya Chikitsa*).

3. *Jatukarna Samhita*:—A good number of quotations from this are referred by *Chakrapaani*, *Vijayarakshita*, *Srikanta*, *Sivadasa* etc.

4. *Paraasara Samhita*:—Quotations from this work are found in the commentaries of *Vijayarakshita*; *Sri Kanta* and *Sivadasa*.

5. *Haareeta Samhita*:—This has been quoted by Chakrapaani and Vijayarakshita. The printed book which passes now bearing this name is considered not to be the original Haareeta Samhita as the quotations referred to by the above commentators are not found in it.

6. *Kshaarapaani Samhita*:—Vijayarakshita, Srikanta and Sivadasa have, in their commentaries, quoted from this book. These six famous works belong to the Aathreya School.

7. *Kharanaada Samhita*:—Many quotations from this work are found in the commentaries of Vijayarakshita, Arundatta, Hemaadri etc. From the quotations given in the commentary of Hemaadri, one will be led to believe that his Kharanaada Samhita is different from that of the other commentators. Probably these two Samhitas may be by different authors of the same name.

8. *Viswaamitra Samhita*:—Chakrapaani in his commentaries on Charaka and Susruta gives quotations from this work. Sivadasa also quotes from this in his commentary on Chakradatta.

9. *Attri Samhita*:—As the ancient writers have not made any reference to this Samhita, antiquity of this is doubted and to its age. Opinions are divided regarding the authorship of this Samhita.

Apart from the above texts Maarkandeya, Aswini, Bhaarakdwaja, Bhaanuputra and other Samhitas are also known to have existed.

Works on Salya Chikitsa (General Surgery)

1. *Susruta Samhita*:—This is popularly known as Vridha Susruta and is considered to be the original of the

existing Samhita. Some Aayurvedists regard both to be the same and see no difference between the two. However, Sivadasa the commentator of Chakrapaani has extensively quoted from the Vriddha Susruta and as such the latter view, viz, that both are the same cannot be taken.

2. *Anpadhucnava Tantra*:—Except its mention in Susruta Samhita nothing remains of this work. However, references to this work occur in the commentary of Dalhana on Susruta Samhita.

3. *Aurabhra Tantra*:—The same remarks of the above Tantra hold good to this also.

4. *Paushkalaavata*:—Chakrapaani refers this in his commentary on Susruta.

4. *Karaveerya Tantra*:—The reference to this author occurs in Susruta. During the age of the Commentators the book seems to be almost obsolete as it could be inferred from the fact that very few extracts have been quoted from this book in the commentaries.

5. *Gopurarakshita Tantra*:—Quotations from this Tantra seldom occur in the commentaries. Many are of opinion that Gopura and Rakshita were two different authors who were contemporaries of Susruta and each of them wrote a Tantra.

6. *Vaitarana Tantra*:—Dalhana and Chakrapaani in their commentaries have frequently quoted from this book. This work seems to be more exhaustive than Susruta because of the extensive quotations, made use of by the commentators from it, on subjects that are not dealt or even mentioned in Susruta.

7. *Bhaaluki Tantra*.—It could be inferred, from the description of surgical instruments etc. as quoted by Chakra-paani from this book that this might have been one of the important works on Salya Saastra. Dalhana, Srikanta Datta and Vijayarakshita have referred to this book in their commentaries. It should be remembered that Bhela Samhita and Bhaaluki Tantra are not identical as is supposed by some but are two different works,

8. *Bhoja Samhita*.—According to Dalhana this is the work of Bhoja Maharshi who was a contemporary of Susruta. Therefore this cannot be attributed to King Bhoja of Dharwar the author of Raajamaartaanda etc. as is generally supposed by some. From the quotations made use of by the commentators, this also seems to be an exhaustive compendium.

9. 10 *Kapila & Goutama Samhitas*.—In the commentaries on Susruta and Nidaana quotations from these books are found.

Works on Saalaky Chikitsa (Diseases of E. N. T.)

These give the treatments of diseases of parts of the body situated above the clavicles such as the Eyes, Ears, Nose, Throat etc.

1. *Chaaksushya Tantra*.—This is also called Chaakshushyena Tantra. Srikanta refers to this book in his commentaries.

2. 3. *Gaargya Tantra* and *Gaalava Tantra*.—Dalhana in his commentary mentions these Tantras.

4. *Kaankaayana Tantra*:—Charaka in many a place refers to Kaankaayana. Only Dalhana mentions in his commentary about this work. Quotations from this work seem to be rare in the other existing Samhitas.

5. *Karala Tantra*:—The author of this work as stated by Dalhana is Karala Bhatta. As no name of any Rishi is found with the surname of Bhatta, it is doubtful whether he is a rishi or not, but according to Dallan and Srikanta Datta etc. this belongs to a very ancient time.

6. *Krishna Aatreya Samhita*:—As to the authorship of this Tantra, opinions are divided. Some attribute this work to Punarvasu Aathreya, but from a close study of the quotations from the commentaries of Srikanta and Sivadasa it could be understood that Krishna Aathreya, the author of this Samhita and Punarvasu Aathreya are different from each other.

7. *Nimi Tantra*:—Many are of opinion that Nimi Tantra and Videha Tantra are identical (See infra). Srikanta Datta has quoted from this work.

8. *Shaunaka Tantra*:—Some are of opinion that the author of this Tantra and the author of Shaunaka Samhita of the Atharva Veda are one and the same. Whether the author belonged to an ancient period or not, he has been referred both by Charaka and Susruta in connection with foetal development. Charaka calls him Shaunaka of Madra Country. However, it is curious to find that passages from it, as they occur in Charaka and Susruta on matters relating to the development of the foetus are self contradictory.

tory. This self contradiction goes to prove that Shaunaka Tantra referred by Charaka and the one referred by Susruta may not be the same.

Dalhana ascribes, the extracts he has made use of in his commentary, to Shaunaka of Madra Desa. One will be inclined to believe from a study of the extracts from this book taken by Dalhana and Chakrapaani that this Tantra treats not only with Surgery but Anatomy and Materia Medica also.

9. *Videha Tantra*:— According to Susruta's own admission, this work is the principal foundation upon which his section dealing with diseases of the E. N. T. was written. This work was believed to have been compiled by the king of Videha. As referred above, Nimi Tantra and this Tantra are two different works and not identical.

Passages from this work are frequently quoted by Dalhana, Vijayarakshita, Shrikant Datta etc. Dalhana and Srikanta Datta quote from Nimi and Videha Tantra on the same subject. From the phrase "Jānakō Vaideha" which occurs in Charaka one may be inclined to suppose that this Videha Tantra might have been a Compilation of Raajarishi Janaka.

Bhoota Vidya Tantras

(Works on Mental and Demonical diseases)

Though, in the commentaries no mention of an independent work has been mentioned on this branch of treatment, this science seems to have flourished at one time.

The following reference may be said to constitute the foundation of this science.

1. Susruta Samhita Uttara Sthaana Chap. 6.
2. Charaka Samhita Chikitsa Sthaana Chap. 8.
3. Vaagbhata, Uttara Sthaana Chap. 4. 5.

It may be probable that in ancient times treatment of mental diseases might have been called Bhoota Vidya. The commentaries which date back a thousand years do not say any thing about this science, a fact which goes to say that this science might have been lost at a very early age.

Works on Kaumaara Bhritya

(Diseases of Children and Pediatrics)

1. *Hiranyaksha Tantra*:—It could be gathered from the extracts quoted by Srikanta Datta that this work chiefly deals with the diseases of children.

2. *Kaasyapa Samhita*:—Recently a book has been published by Sri Yadavaji Acharya of Bombay under the name of Kaasyapa Samhita known as Vriddha Jeevaka Tantra. This chiefly deals with the diseases of children.

3. In his Uttara tantra, Susruta devotes not less than 12 chapters for the diseases of children a fact which leads us to believe that at one time, this branch of Aayurveda was extensively cultivated.

4. A book by name Kaumaara bhritya Tantra has been mentioned by Chakrapani. The author of this Tantra is not traceable.

5. *Jeevaka* and other *Tantras*:—Many *Tantras* on this subject seem to have been lost. Dalhana mentions in his commentary on *Uttarasthaana* of *Susruta*, the names of *Jeevaka*, *Paivataka* and *Bandhaka*. All these authors are believed, to be Buddhist Monks whose names are found in the Buddhist history. (For *Jeevaka* see page 53.)

Works on Agada Chikitsa. (Toxicology.)

1. *Kaasyapa Samhita*:— In the commentaries of Dalhana, Chakrapaani and Srikanta, quotations from this work are found. As to the nature of the book, opinions are divided. Some say it is a book on general medicine. Some are of opinion that this *Kasyapa* is no other than the *Rish Kasyapa* of *Mahabharat* who was dissuaded by *Takshaka* while he was going to treat *Parikshit* for snake bite

2. *Alambaayana Samhita*:—Extracts from this work are given by Srikanta Datta in his commentary.

3. *Ushanaha Samhita*:— It is believed that *Kautilya* has chiefly based his remarks in connection with various cures for poisoning and the post mortem examinations in his *Artha Saastra* from this text.

4. *Sanaka Samhita*:— This has been formerly translated into *Yavana* language by the *Yavanas*. This has been discovered by Pro. Muller, a German scholar.

5. *Laattayana Samhita*:— In Dalhana's Commentary extract from this work are met with.

6. *Brihaspti Samhita*:— A text bearing this name seems to have existed.

Rasaayana Chikitsa.

1. *Patanjali Samhita*:— This has been quoted in many places by the commentetors.

2. *Naagaarjuna Tantra*:— The authorship of this, is considered by many, as belonging to Kishi Nagaarjuna whom Chakrapaani mentions in his Samgraha. Others assert that it is the production of Aacharya Naagarjuna, the Buddhist monk whose name is mentiond on the stone pillar at Paatilit putra.

3. 4. *Kakshaputa Tantra* and *Arogya manjari*:—Both these are by Naagarjuna. Vijaya raksita in his commentary on Nidaana quotes from Aarogya manjiri.

5. 6. 7. *Vyaari, Vashista and Maandavya Tantras*:—These prinipally deal with Rasa Saastra (Chemistry) and date from a very ancient time. We find the names of Vyaari and others in Rasaratna Samuchaya in which is appended a list of vota-ries of this Science.

Works on Vajikarana Ghikitsa.

The ancient Aayurvedic Rishis can with pardonable pride, be said to have specialised highly in this branch of treatment, a glorious achievement for the conservation and restoration of vim and vigour, by the preservation of the vital fluid viz., the semen a principle now coming to be faintly realised in the Western Medical Science. The impor-tnce of this subject in Western Medicine has been of late brought to light by the researches of Brown Sequard and Metchinkoff and laterly by the demonstrations of Voronoff.

The ancient Rishies appreciated and realised the importance and high value of the internal secretions and their inherent benefits especially of the sexual glands and prescribed certain rules regarding the sexual life of an individual.

Many a Samhita seems to have been written on this branch of Chikitsa from the references made to certain names of the authors in Vatsayana Kama Sutas. But, as the commentators have not made any reference regarding these texts in their commentaries, it seems that these originals might have been lost atleast a thousand years back. As Vatsayana mentions of Aupanishadic treatment and processes of sexual invigouration, it is evident that these texts were not lost two thousands years back.

1. *Kuchumara Tantra*:— Kuchumara was one of the seven Rishis who wrote independant Samhitas on this subject. Vatsayana in his Kamasutra states that Kuchumara Tantra was at one time a very valued and important work on sexual science.

2 & 3. *Swetaketu and Panchala Tantras*:—Swetaketu, son of Uddalaka, and Panchala son of Babru are believed to have condensed the Samhita compiled by Nandi which covered a thousand chapters. The former abbreviated it into five hundred chapters while the latter further reduced and classified it into seven parts.

4. *Vatsyana Kamasutras*:—In the later decades though not directly connected with Vajikarana Chikitsa but connected with the scientific art of human breeding, certain treatises on sexual science viz., Kamasutra, Anangaranga, Ratisastra etc., have been composed expounding the problems

of vital importance to the couple on various aspects, which challenge comparison to recent researches on these topics. Of these, Vatsayanas, Kamasutras stand eminent. Regarding Vatsayanas difference of opinion exists. Some say that he is no other than Chanakya of Kautilya, the famous minister of Chandra Gupta while others hold him as a Rishi. Whatever it may be, it is beyond doubt that he existed more than two thousand five hundred years ago and consequently Swetaketu and Panchala belonged to an even earlier date.

Pasu Chikitsa Samhitas.

(Works on Veterinary Science)

In ancient days, elephants and horses formed important agents in the wars and as such particular care was taken regarding their health. Animals were the wealth of the ancient Aaryans and prayers for their protection are found in the Vedas. No wonder then that this branch of Aayurveda was extensively developed side by side with human medicine.

Many books are found on this branch of Aayurveda belonging to this date. But the following may be said to be important.

(1) *Palakapya Samhita*:—This is otherwise known as Hasti Aayurveda or Gaja Aayurveda. This is an exhaustive work on the treatment of diseases of Elephants which was written in the form of a discourse by Sage Palakapya delivered to Romapada, king of Anga desa. The scheme of this Samhita, in the arrangement of the topics, the naming.

of the Sthanas etc., more or less coincides with those of other Medical Samhitas. This was published by Aanandashramam, Poona.

(2) *Gotama Samhita*:—This is now rare and is chiefly concerned with the treatment of the diseases of the kine.

(3) *Salihotra Samhita*:—This deals chiefly with the diseases of the horses. This forms the basis of Aswavaidya of Nakula and Jaiya Datta. Thogh it is very rare now, at one time it was a very valuable text and under the name of "Shalatore" was translated by the Arabians into their language. For a list of books on *Pasu Chikitsa*—refer "Report of the Council of Agricultral Research" by Dr. A. Kritna Sami G. M. V. C. Madras 1952.

Ayurveda made an Upaveda.

Within a short compass, we give below a summary* of the advancement of Aayurveda in various departments during the Samhita period.

The Name Ayurveda.

The word Aayurveda may be said to have come into existence during this period only as the term Aayurveda does not occur any where in the Vadas.

* For a list of these Samhitas, we are indebted to Sri Mahamahopadhyaya K. Gana Nath Sen, M. A., L. M. S. for his articles in the Journal of Ayurveda of 1925 issues

From the available medical treatises belonging to this period one will find that the topics relating to medicine which were hitherto lying scattered in fragments here and there in the Vedas were collected and systematised on a scientific basis and this literature and science thus evolved, the name of Aayurveda was given which was thence considered an *Upaveda* or an *Upanga* † (a branch of veda) by the Rishis). (See page 259).

† According to Dalhana an Upanga is a minor organ 'Angameva Alpatwat Upanam' i. e. while extremities head and trunk etc. are regarded as Angas, fingers, toes and nose etc., are regarded as Upangas. But it is curious how Aayurveda which according to Susruta originally contained 1,00,000 verses which was more than ten, times the bulk of Atharva Veda which contains 6,000 verses and one thousand prose lines only was made an Upanga of the latter. And, of the two viz., Atharva veda and Aayurveda both of which deal with the curing of diseases, the former more on account of its religious value held higher and primary. While commenting upon Kousika Sutra 25-2' Darilabhatta gives us a hint regarding the point of coincidence and difference between Ayurveda and Atharvaveda. He says 'Dwiprakara Vyadhyah. Aahara nimitta asubhanimitta scheti. Tatra ahara samuthanau vaishamya Aayurvedam chakara. Adharma samuddhanantitu sastra midanu uchyate. There are two kinds of diseases those that are produced by unwholesome diet (metabolic diseases) and those produced by transgression Adharma of the rules of Hygiene (Microbic diseases). Aayurveda was intended for curing the former and the Atharva Veda for curing the latter. By the commonness viz., the quality of curing diseases Atharvaveda becomes related to Aayurveda. "Atharvavedasya Aayurvedatvam bhavati."

It was during this period that the mighty edifice of Aayurveda was raised upon the deep Darsanic foundation supported by the two *Upatshamḥas* or pillars, viz., The Panchabhautika and Thri-Dosha Siddhantas.

Anatomy.

The excellence of the anatomical knowledge attained by the Aayurvedists of this period can best be understood from the testimony of Dr. Wise in his commentary on The Hindu System of Medicine. "The Hindu philosophers undoubtedly deserve the credit of having entertained sound and philosophical views respecting the uses of the dead to the living and were the first scientific and successful cultivators of most important and essential of all the departments of the medical knowledge viz, "Practical Anatomy." The importance and utility of the knowledge of anatomy in the practice of Medicine and Yoga was realized and Susruta says that for the benefits of the medical men and contemplative Yogies that he has written the anatomical portions. In order to varify the knowledge acquired from the texts, Susruta advocated a practical method of dissection called Avagharshana (Dissection).

Dr. Hornle remarks "The views of the early Indian anatomists are surprisingly accurate. This is due to the fact that they were accustomed to the practice of preparing the dead human body for actual examination, and that therefore their views were the direct result of an experimental knowledge of the skeleton".

Susruta describes at the end of the fifth chapter of Sareera Sthana, his process of dissenting as follows "No accurate account of any part of the body including even its skin can be rendered without a knowledge of anatomy. Hence any one who wishes to acquire a thorough knowledge of anatomy must prepare a dead body and carefully examine all its parts. For it is only by combining both direct ocular observation and the information of text books that a thorough knowledge is obtained."

"For this purpose one should select a body which is complete in all its parts. It should also be the body of a person who was not excessively old, nor who died of poison or of a protracted disease. Having removed all excrementitious matter from the entrails, the body should be wrapped in rush, or bast or grass or hemp and placed in a cage. Having firmly secured the latter, in a hidden spot, in a river with no strong current, the body should be allowed to decompose. After an interval of seven days, the thoroughly decomposed body should be taken out, and very slowly scrubbed with a whisk made of grass roots, or bamboo or bast. At the same time every part of the body, great or small, external and internal beginning with the skin should be examined with the eye one after the other, as it becomes disclosed in the course of the process of scrubbing."

To Susruta and to him alone the credit and glory of practising such human dissections as the first in the world may be attributed as it was only about 300 B. C. that we know of such dissections being encouraged in the Alexandrian school in the West. The doctrine of *marmas** (vital centres

*Marmas by Dr. P. V. Krishna Rao. B. A. M. B. B. S. Principal Govt. Indian Medical School, Madras may be referred.

in the body), the conception of the shed Chakras (the six nerve plexuses), and of the subtle and causal bodies which are all beyond the cognition of our senses, stand even to day as marvels of Hindu anatomy."

Embryology.

This was carefully investigated into and studied. The successive processes of developments taking place in the womb from the time of conception to the birth of the child were recorded after a careful and keen observation. Even an Upanishad by name Garbhopanishad was devoted to this branch of science. Sex determining factors were investigated. The influence of certain religious ceremonies and the use of certain herbs on establishing the sex of the foetus were described.¹ Even the possibility of conception without actual sexual union was conceived.² Causes for unnatural births (Teratology), for plural births and even the causation of pregnancy by the influence of dreaming under certain circumstances and thereby begetting a boneless foetus were explained.³

Physiology.

The process of digestion and assimilation and the circulation of Rasa and Rakta dhatus and even of the three Dhatus (Doshas) were described. The nervous system was specially studied by the Yogies and Tantrikas. (See Philosophical Background by Dr. A. Lakshmi Pati.)

1. Sus-Saa-Chap 2. V. 48-49. 2. Sus-Saa-Chap 2. V. 48-49.

§ For further details refer to Aryan Embryology published in the Journal of Ayurveda, 1932, Calcutta.

3. Charaka Ch. 15.

Materia Medica.

This was anormously investigated and studied on the basis of *Panchabhautika* and Tri Dosha Siddhantas. The effects of the five inherent properties of every substance viz. Rasa, Guna (property), Veerya (heating and cooling effects), Vipaka, (remote action after assimilation) and Prabhava (specific action) on health and disease were explained. All substances were classified under different classes according to the nature of such origin as Mineral, Vegetable and Animal and also according to their properties and actions as Deepana (Carminative), Pachana (Digestive) etc., Each drug was given different names (synonyms) indicating its medicinal properties, actions, botanical description, habitat etc.

Hindu sciences teach that plants have a sort of dormant or latent consciousness and are capable of feeling, pleasure and pain. In Santi Parva of Mahabharatha⁴ we find references to the sensitiveness of plants to heat, cold, to the sound of thunder etc. as well as to odours both pleasant and unpleasant. Charaka divides plants into four clases viz., Vanaspathies (trees bearing fruits without flowers): Vana-patyas (trees bearing both flowers and fruits): Oushadhees (herbs that whither after fructification) and Virrudhas (other herbs with spreading stems).

Pharmacy.

Side by side with the development of the Science of Materia Medica, the art of Pharmacy was also

⁴ 4. Refer to Section on Deha Dhatus Vol II-Section 1.
For Ayurveda in the Epics, See page 124

developed to a high degree of perfection. Medicines were prepared in a variety of forms as powders, decoctions, pills, medicated oils and ghees, confections, Aasavas and Aristas (products of fermentation). Purification of minerals and their reduction to Bhasmas were known. Compounds of iron, gold, calcuim and arsinic and mercury were prepared for internal administration.

Bacteriology was studied and different krimis (Pathojenic, visible and invisible Parasites) were described. † Regarding the existence of micro-organisms clear references were given in the Santi Parva of Mahabharatam. 'Sokshma Yoneni. bhottani, tarkagamyani kamichit—pakshmanopi nipatena yo sam syat skandha paryayan'. There are in this world so many micro-organisms invisible to the naked eye, the minuteness of the existence of which can, however, be imagined; which, we say, that by merely moving of one's eyelids their limbs will be destroyed.

Diagnosis.

Diagnosis of diseases was made through its five fold method viz, *panchalakshana* Nidana. Prgnosis was also determined through dreams of the patient and through the messenger. The symptoms for-boding death in different diseases formed a special study of this period (See Arishtasinthu Indriya Stana of Charaka).

Surgery.

Regarding the excellence of Surgery attained during this period, the reader may be interested to know what the Encyclopoedia Britaunica says. (9th Edition).

† Charaka Vimana—Ch. 7,

Surgical Instruments.

"Susruta describes more than one hundred surgical instruments, made of steel. They should have good handles and firm joints, be well polished, and sharp enough to divide a hair; they should be perfectly clean, and kept in flannel in a wooden box. They included various shapes of scalpels, bistouries, lancets, scarifiers, saws, bone nippers, scissors, trocars, and needles. There were also blunt hooks, loops, probes (including a caustic holder), directors, sounds, scoops and forceps (for polypi & c.), as well as catheters syringes, a rectal speculum, and bougies. There were fourteen varieties of bandadages. The favourite form of splint was made of thin slips of bamboo bound together with string and cut to the length required. Wise says that he has frequently used 'this admirable splint,' particularly for fractures of the thigh, humerus, radius, and ulna, and it has been subsequently adopted in English army under the name of the patent rattan-cane splint."

Operations.

Fractures were diagnosed, among other signs, by crepitus. Dislocations were elaborately classified, and, the differential diagnosis given: the treatment was by traction and countertraction, circumduction, and other dexterous manipulations. Wounds were divided into incised, punctured, lacerated, contused etc. Skill in extracting foreign bodies was carried to a great height, the magnet being used for iron particles under certain specified circumstances. Inflammations were treated by the usual anti-phlogistic regimen and appliances: venesection was practised at several other points beside the end of the elbow: leeches were more often

resorted to than the lancets: cupping also was in general use. Poulticing, fomenting and the like were done as at present. Amputation was done now and then, notwithstanding the want of a good control over the haemorrhage: boiling oil was applied to the stump, with pressure by means of cup formed bandage, pitch being some times added. Tumours and enlarged lymphatic glands were cut out, and an arsenical solve applied to the raw surfaces to prevent recurrence. Abdominal dropsy¹ and hydrocle² were treated by tapping with a trocar; and varieties of hernia were understood, omental hernia being removed by operation on the scrotum. Aneurisms were known, but not treated*. Besides the operations already mentioned, the abdomen was opened by a short incision below the umbilicus slightly to the left of the middle line, for the purpose of removing intestinal concretions or other obstruction (laparotomy). Only a small segment of the bowel was exposed at one time; the concretion when found was removed, the intestine stitched together again, anointed with ghee and honey, and returned into the cavity† Lithotomy was practised without the staff. There was a plastic operation for the restoration of the nose, the skin being taken from the cheek adjoining, and the vascularity kept up by a bridge of tissues. The ophthalmic surgery included extraction of cataract.³ Obstetric operations were various, including caesarean section and crushing the foetus⁴. (See page 304) Surgery from scope of Aayurved in Rig Ved.

¹ Sus. Chi. Chap. 19, ² Sus. Chi. Chap. 14.

* Spenser Wells type of Artery forceps which does not leave off its grip until it is loosened was known.

† Sus. Chi. Chap. 14. § Sus. Sutra. Chap. 16. • Sus. Chap. 15. 3 Sus. Uttara Chap. 17.

Medical Treatment—in Surgical Cases.

The medication and constitutional treatment in surgical cases were in keeping with the general care and elaborateness of their practice, and with the copiousness of their materia medica. Ointments and other external applications had usually a basis of ghee (or clarified butter), and contained, among other things, such metals as arsenic, zinc, copper, mercury, and sulphate of iron. For every emergency and every known form of disease there were elaborate and minute directions in the sastras, which were taught by the physicians to the young aspirants under the *Gurukul System*.

Training of Practitioners.

Book learning was considered of no use without experience and manual skill in operations; the different surgical operations were shown to the student upon wax spread on a board, on gourds, encumbers, and other soft fruits; tapping and puncturing were practised on a leathern bag filled with water or soft mud; scarifications and bleeding on the fresh hides of animals from which the hair had been removed; puncturing and lancing upon the hollow stalks of water-lilies or the vessels of dead animals; bandaging was practised on flexible models of the human body; sutures on leather and cloth; the plastic operations on dead animals; and the application of caustics and cauteries on living animals*. A knowledge of anatomy was held to be necessary, but it does not appear that it was systematically acquired by dissection.† The whole body of teaching, (is) itself the slow growth of much close observation and profound thinking during the vigorous period of Aryan progress. Pathological

* Sus. Sutra. Chap. 9.

principles were not wanting, but they were derived from a purely arbitrary or conventional physiology (wind, bile, and phlegm); and the whole elaborate fabric of rules and direction, great though its utility must have been for many generations, was without the quickening power of reason and freedom, and became inevitably stiff and decrepit'. (Ency-Britt. 9th Edition).

Certain plasters were recommended for rapid filling up of flesh in the wounds and ulcers (*utsadana*) and also for the removal of over growths (*Avasadana*) over them††. *Romasanjanana* is a speciality of Hindu surgery. It is the application of certain plasters for the growth of hair over healed ulcers.

Thus it could be inferred that the ancient Hindu Surgeons of this period were bold experts in their art and performed many major operations which are considered to be the triumph of the modern day surgery and midwifery.

Surgeons were employed by the Royal Court whose quarters were located near that of the kings, (Sus. Chap. 34. V 20.-21.). During the military marches surgeons accompanied the army to the fields. They used to attend to the purification of the poisoned atmosphere food of cattle and men, fuel and water supply. Even the shades of trees were said to be poisoned by the enemies, It was the duty of the surgeon to detect and prevent any danger (Sus-Sutra-Chap-Uktaseniya Adhyaya.)

†† Cha. Chi. Chap. 25.

Midwifery.

Even in the region of Midwifery a high degree of perfection was attained. Antenatal care was given special importance. Eight kinds of false presentations were described by Susruta (Sus. Chi-chap. 15 V 5) who in case of difficult labour advised the use of suitable instruments. Embryotomy and Caesarean section were practised. The management of the purperium and of the new born infant§ the choice of the wet nurse and tests for finding out the healthy and unhealthy breast milk were described. The description of a labour room and that of a baby's apartments were given by Susruta in detail. (Sus. Sar. Chap. 10)

Hygiene.

During this period general medicine developed in every possible way. Susruta enumerates as many as eleven hundred and twenty diseases† The causation of all the diseases was attributed to the improper correlation of *Kala* (time) *Artha* (Perception) and *Karma* (action) and the consequent vitiation of *Doshas*. The root cause of epidemics was attributed to *Adharma* (improper conduct) of human beings resulting negligence to cultivate the land properly. Hygienic principles both personal and civic were given the greatest importance in the preservation of the health of the nation. Epidemic diseases were known to spread by direct contact and through contaminated food and drinking water. (Cha-Vimana-Chap. III).

§ For further details Dr. G. N. Mukharjee's 'Surgical Instruments of the Hindus' may be consulted. Specimens of Hindu surgical instruments are preserved in Nepal's Museum and Wellcome, Historical Museum, England.

† Sus. Uttara. Chap. 66.

It has now been established that underground drainage system and Public Health Engineering existed in cities as demonstrated by the excavated city of *Mo-han-jo-Dauro* in Sindh in pollution of water, air and food.

Eugenics,

The principles of eugenics were well understood and certain methods were indicated for begetting beautiful, strong and intelligent children. †

Thus Ayurveda was developed in all its departments during this period. It was complete as a science. It reached a high stage of perfection as an art.

Medical Profession Organised,

Medical profession was organised and regulated by a code of medical ethics. Every student was carefully examined before he was initiated into the study of Aayurveda: and was selected only when he was found to satisfy all the physical, cultural and intellectual conditions necessary for a student of medicine. The students were divided into their classes, as *Uttama Madhyama* and *Alpa Buddhiyula* according to their intellectual capacities. Text books were prepared in a simple language and well illustrated so as to suit all the three classes §. The student had to take a solemn oath in the presence of *Agni* and *Rishis* as to his good conduct during and after his studentship. It is probable that Hippocrates borrowed and adopted this oath from the Hindus.

† Cha. Sareera Ch. 8.

§ Charaka vimana Ch. 8.

Medical Registration.

From Susruta we also learn that a system of Medical Registration was in vogue. Every student after completing his medical education and after taking permission from his teacher had to obtain the sanction of the ruler of his country for the practice of surgery. The kings imposed penalties for gross negligence or want of knowledge or skill on the part of the physician. (Sus. Sutra. Chap. 10.)

Medical Ethics.

A code of medical ethics was also formulated, details of which are found in Charaka and Susruta in many places.

Medical Conferences.

The importance of Parishads (conferences) was highly commended. We learn from Charak and Susruta that Rishis used to congregate now and then and held discussions on doubtful subjects on the slopes of the inspiring Himalayas* Forests like *Chaitraaradha* † were mentioned as places of such congregations. Rishis from all over the country used to attend such conferences. *Kankayana* whose name was associated with such conferences was a Bahlika (Turk or Greek)†. Not only medical men but also kings and professors of allied sciences (Darasanas-especially of Sankhya) used to attend and take part in the discussions.†† It is believed that *Agnivesa* and many others incorporated in their Text Books reports of such conferences.

* Charak Sootra Ch. I. † Charak Sootra Ch. 26. † Charaka Sootra Ch. 26. †† Charaka Sootra Ch. 13.

Specialists.

Classification of medical men as specialists and general practitioners is found in this period. (Refer to Aayurveda in the Epics P. 124).

Quacks.

Ku vaidyas (quacks) no doubt existed even at this period. We come across descriptions of uneducated physicians both in Charaka and Susruta Samhitas, who were condemned in strong terms. Charaka says that they deserve capital punishment at the hands of the king. He describes three classes of physicians viz., those that dress themselves as vaidyas and wander about deceiving people, those that become physicians by mere heredity and those that are really learned*.

Hospitals in Ancient India.

Charaka describes how buildings intended for Health Resorts for Rasayana Treatment and apartments for the new born infant should be constructed and equipped. The mention of musicians and storytellers for the recreation of the patients is worthy of note. Intelligent and well trained nurses were employed in these hospitals. (See chapter 15 Sutra Sthana).

Universal Education in Medicine.

Medicine was studied by all (*varnas*). It was studied by *Brahmins* for preserving their own health and for doing good to all beings, by *Kshatriyas* for self protection, by *Vaisyas* for trade and in general by all for the acquisition of the four *purusharathas*.†

* Ch. Soo. Ch. II— † Ch. Soo. Ch. 30.

The Four Purushadhas or Aspirations in Life.

The attainment of Dharma, Artha, Kaama, and Moksha was and is the chief aim of the Hindus and of everyone of their sciences. No wonder then that Hindu anatomy, physiology and all other branches were developed on lines suitable for the attainment of the four *purusharthas*. This aim was effected by blending Aayurveda with philosophy and religion. The object of Ayurveda is the succesful attainment of the four *purusharthas* (Vag. Soo-Ch. 1.) Although Aayurveda accepted the principle of self-surrender to God (*Bhakti* and *Prapatti*) as easier methods of obtaining *Moksha*, Aayurveda wants the maintenance of a sound body as a preliminary for the harmonious attainment of the four Purushaarthas.

Development of Ayurveda in South India.

(Agasthya Sampradaya) *

While *Aathreya* and *Dhanwantri* thus propagated the science of Aayurveda in the North (*Aaryavartha*), *Agasthya* a desciple of *Dhanwantari* carried it to South India (*Dakshinapadha*) and founded a new school of Medicine after his name. Many identify him with Agasthya of Ramayana.

It is traditionally believed that Agastya imparted this science to *Pulastyar* who instructed *Therayyar* who in turn taught *Uhamuni*. According to some, the number of propagators of this scool of medicine was forty eight while according to another tradition, it was only twenty four.

* Adopted fom Pandit D. Gopalacharyulu's Telugu Edition of 'Agasthyavaidya'.

Others assert that only eighteen were the propagators who were all *Siddhas*.†

From the treatise of *Uhamuni*, the following names are found as the propagators of this school. *Nandeswar, Agasthyar, Matsyamuni, Pidinakkissar, Pulasthyar, Pumsunder, Karavurar Tirumoolar. Chattamuni, Romarishi, Bhojar, Brahma Muni Sundarar, Vama Dever, Verayyar, Kapilar, Kamala muni and Konganar.*

Further, it seems that in South India, Ayurveda was studied and practised in two different traditions viz. the Vada (Northern), and the Thengala (Southern). Agasthyar, Pulasthyar, Nandeswar wrote their treatises in Sanskrit following the Northern tradition while Therayyar, Bhogar Pulippani etc., wrote in Tamil.

The school of Agasthyar was a combination of Vaidika and Tantrika cults. This system of medicine is extensively practised even to day in the Tamil Country and also to some extent in the Aandhra, Maharastra areas and even Ceylon, Singapore, Burma, and Tibet.

III

Baudha Yoga.

[CONTENTS :— Establishment of Free Hospitals—Spread of Hindu Medicine to Foreign Countries—Redaction of Agnivesa and Susruta Samhitas.

† See chapter Philosophy of the Sidhas in 'Philosophical Back-ground' by Dr. A. Laxsmi Pathi.

This period extends from 500 B. C. to 600 A. D. which may be said to be brightest of all the periods in the history of Aayurveda specially in relations to its extensive propagation. Many universities were established of which Taxilla distinguished itself as the greatest centre of medical education (see Page 53). Jeevaka who made a great name for himself as a great physician and surgeon belonged to the earliest part of this period. He was physician to the king and the Buddha. (6th century B. C.) He is said to have possessed a medicinal herb by name Bhaishaiyaraaja which had the specific property of illuminating the internal organs when placed over the body. §

Jeevaka's fame spread far and wide even beyond the borders of India that once in compliance with the request of the Royal Court of Egypt, he was sent by Emperor Bimbisara for treating Ptolemy the then king of Egypt. Hippocrates the father of Western medicine 460 B. C. was a century later than Jeevaka. (For further particulars of Jeevaka see Pages 53-58).

Establishment of Free Hospitals.

The Hindus were the first to establish hospitals for the treatment of poor people. During the reign of Chandra Gupta (321 B. C.—296 A. D.) special attention was given to the establishment of hospitals and dispensaries and for enforcing rules of sanitation. A register of births and deaths was created. The city council collectively administered the general affairs such as finance sanitation, water supply etc., The bye-laws of the city imposed fines upon persons defiling public roads and reservoirs, and for allowing dead animals or

§ See Page 133 also. History of Medicine—Cumstone.

human corpse to pollute public places. Special routes were prescribed for funeral processions and no corpse was allowed to be buried or cremated except in the public cemeteries or cremation grounds. Special Inams were granted for the village physician and the village veterinary surgeon*. Rules for the practice of medicine also framed (see page 49.).

Spread of Hindu Medicine to Foreign Countries.

Tradition says that many illustrious men from Greece and other foreign countries visited India and took back with them the Hindu science and embodied them in their schools. Alexander the Great is said to have taken with him some Indian Physicians (toxicologists) after his Indian campaign being attracted by their successful cures of snake bites. The Buddhist monks that were sent out to foreign lands by Asoka preaching Buddhism practised medicine as a part of their humanitarian work. They studied medicine along with philosophy and fortified their spiritual ministry by relieving the suffering of the people.

Further, Asoka having embraced Buddhism, established many dispensaries both for men and beasts. He founded a state pharmacy where medicines were prepared. Medicinal plants were cultivated not only in soils, suitable to them but also in pots. Marginal furrows between any two rows of crops were utilised for the plantation of fragrant plants, medicinal herbs and the like.

Vrikshayurveda, the science of Botany dealing with the growth, classification of plants, health, disease and treatment of plants was studied as a special subject (See next chapter.)

† Artha Sastra of Kautilya. Ch. I.

Susruta Samhita was redacted by Nagaarjuna who was probably the founder of Māhayana (see pages 92-133).

Agnivesa Samhita was redacted by Charak who was probably the court physician of king Kanishka (120 A. D. 150 A. D.). Cladius Galen may be a contemporary of Charaka. Regarding the identity of Charaka opinion is divided among scholars.

During the closing years of this period, Dhanvantari one of the nine gems of king Vikramaditya composed a book on Materia Medical after his name. Dhanvantari Nighantu being the first of its kind (see page 146), Amarasimha a contemporary of Dhanvantari who belonged to the same court composed a lexicon by name Amarakosa in which he gave synonyms of many drugs.

PAURANIKA YOGA.

[CONTENTS :- Propagation of Aayurveda through Puranas—Benefits of establishing free. Hospitals—Patronage of the Caliphate— The School of Chemists—India's Contribution to Chemical knowledge—Alberuni's evidence—Nagarjuna—Equipment of a Chemical laboratory—Expert knowlege in Metallurgy—Chemistry in Modern India].

Propagation of Aayurveda through Puranas.

This period roughly occupies from 600 A. D. to 1000 A. D. Most of the Puranas were compiled during this period. But the date of the compilation of the earliest Puranas cannot be ascertained. There is mention of the word Puraana in Atharva Veda, Taithareya Aranyak, Satapadha Brahmana and Chandogya etc., § Propagation of the study of Aayurveda

§ Atharvaveda II. 7. 24.—Taithareya 2. II.—Satapadha 13. 43. 13. Chandogya. 3. 1. 1. Andhra Vignana.Servaswam 1st Edition 3rd Volume.

was attempted through Purans and such propagation formed one of their main themes (See pages 150-151).

Benefits of Establishing Free Hospitals.

The benefits of establishing free Hospitals were eulogized in many of the Puranas as Nandi, Saura, Skanda, etc., in high terms. No charity was considered greater than that of bestowing health upon the sick. In dispensaries established during these times, not only medicines were given free but also food and even medicated oils for Abhyangam and bath (Aushadham pathya maharam tailabyanga pratisramam)† Some Puranas not only mention the benefits of establishing such free hospitals but also actually deal with subjects relating to medicine among which Agni Pnraṇa, Garuda Purana, Maschya Purana, and the like are prominent.

The kings inscribed rules of good conduct for the moral and physical developement for the masses on stone pillars and laid them along road-sides and public places. The famous recipe of Siddha Nagarjuna Varthi for immature cataract was inscribed on one of such stone pillars at Patilaputra (Gadani-graha).

Thus during this period Aayurveda was propagated in every possible way by the Buddhist Kings and monks. Siddhas of Buddhistic School developed Tantrika Worship and Yoga like the Hindus (See page-101 Siddhas-Philosophical Back-Ground). We have evidences that Silāditya II (583-600 A. D.) established many free hospitals all over his dominion. During the 7th Century Jaijjatacharya wrote his commentaries on Charaka and Susruta.

† For further particulars. Surgical Instruments of the Hindus by Dr. G. N. Mukharjee may be consulted.

Patronage of The Caliphate.

During the early centuries of this period the Abbasid Caliphs of Bagdad who reigned from 750 A. D. to 850 A. D. being great patrons of letters and sciences founded a great library in their capital, Bagdad and made it an international Centre of learning. Of the ten Caliphs who reigned during this century Harun All Rashid (786 A. D.) greatly patronised Hindu culture and had many Ayurvedic and other books translated into Arabic which were afterwards rendered into Latin and Greek. The names of Charaka and Susruta were very familiar to Avicenna and Rhazes, whose texts formed the basis of Modern Medical Science. Under instructions from Haroon All Rashid, Manka an Indian physician was said to have translated toxicological portions of Ayurveda into Persian. He was Physician to the Caliph.

Ibn Osaiba an Arabic Historian mentions the names of Manka and Sale in his History of Hindu Physicians. Sale, he wrote, lived in Iraq, travelled as far as Palestine and spent his last days in Egypt.

Evidences go to prove that in Cordova Hindu physicians were employed as chief physicians in hospitals established by the Western Caliphate.*

The School of Chemists.

The special feature of this period was the development of Rasa Sastra (Chemistry) in its various departments and even a Darsana by name Rasasvara Darsana was promulgated

* Arabian Medicine by Browne,

by that school. Govinda Bhagavat Padacharya the preceptor of Adi Sankara had written a book on this branch of science by name 'Rasa Hridaya Tantra'.

Bhattacharaka Harichandra (931 A. D.) who was court physician of Sehasanka Raja wrote a commentary on Charaka and redacted '*Kharanadha Samhita*'. (For further particulars refer to page 150—Ayurveda in Pauranika Yuga).

India's Contribution to Ceemical Knowledge.

It will not be out of place if we just make here a passing reference to India's contribution to chemical knowledge.

The Vedas may be said to be the first book of knowledge of Medicine and Alchemy in ancient Hindusthan. The term 'Aayushyam' (the securing of long-life and health) which occurs in the hymns of the Atharva Veda was converted later on to 'Rasayana' which is practically the equivalent of Alchemy.

Alberuni's Evidence.

A flood of light on the exact state of scientific and medical knowledge prevalent in India about the ninth or tenth century A. D. is available from the book on India written by the great Muslim scholar Alberuni, who lived in India from 1017 to 1030 A. D. and mastered Sanskrit and Philosophy in the original. This versatile Muslim scholar has left the following account as a true perspective of the chemical knowledge in India about the eleventh century A. D. 'I only heard them (Hindus) speaking of the process of

sublimation, of calcination, of alkalis and of the waxing of talc. (Satwapatanam)

"They have a science similar to alchemy which is quite peculiar to them. They call it Rasayana—It means an art which is restricted to certain operations, drugs and compounds and medicines, most of which are taken from plants. Its principles restored the health of those who were ill beyond hope and gave back youth to fading old age" A translation of Charaka's book occupied a place in the library of this cultured Arab.

Professor Sachau, who translated and edited Alberuni's India, states as follows:

"What India has contributed reached Bagdad by two different roads—Another influx of Hindu learning took place under Haroon (A. D. 786-808). Induced probably by family traditions, they sent scholars to India there to study medicine and pharmacology. Besides, they engaged Hindu scholars to come to Bagdad, made them the chief physicians of their hospitals and ordered them to translate from Sanskrit into Arabic, books on medicine, pharmacology, toxicology, philosophy, astrology and other subjects. Still in later centuries, Muslim scholars sometimes travelled for the same purposes."

Nagarjuna.

One of the greatest achievements of Hindu Medicine is the introduction of metallic preparations, specially those of mercury and iron, in medicine much earlier than in the West.

Although *Patanjali, the commentator on the grammar of Panini, was also an alchemist of repute was said to have flourished in the second century B. C. and was an authority on the science of iron (Loha-sastra), the great Buddhist scientist Nagarjuna who flourished in the eighth or ninth century A. D. (an earlier date-1st Century is also possible.) was the first to use the mercury preparation *Kajjali* (black sulphide of mercury) in medicine. One Nagarjuna lived at Nagarjuna Konda in Guntur District and died at Sri Sailam (Kurnool Dt.). He enjoyed the patronage of the Satavahana Aandhra Kings, of the 1st Century A. D. (See p. 93).

The following statement of Alberuni bears out that a great Buddhist seer Nagarjuna, who is credited with the discovery of the processes of distillation and calcination, must have lived in the eighth or the ninth century A. D.

"A famous representative of this art (alchemy) was Nagarjuna, a native of the Daihek near Somanath. He excelled in it and composed a book which contains the substance of the whole literature on this subject and is very rare. He lived a hundred years before our time."

Hiuen Tsang who stayed in India from 629 A. D. onwards makes the following remarks regarding Nagarjuna: "Nagarjuna Bodhisattva was well practised in the art of

* The tradition is that Patanjali was the author of (1) Bhashya of Panini (2) Charaka Samhita and (3) Yoga Sastra. Bhoja in his Nyaya Vartika says:— "Yogena chittasya padena vacham molam sarerasya tu vaid-yakena Yoapa taret tam pravaram munenam Patanjilim pranjali ranotosomi". He is thus regarded as the sole purifier of language, body and mind.

compounding medicine; by taking a preparation (pill or cake) he nourished the years of life for many hundreds of years so that neither the mind nor appearance decayed."

It seems, therefore, that this Nagarjuna very likely lived in the seventh century A. D. or even earlier. There appear to be several Nagarjunas.

In Europe Paracelsus (1493-1541) is credited with the use of a mercury preparation internally as medicine. It is now well known that Paracelsus travelled extensively in the East and might have obtained the information that mercury preparations were in use internally in the Oriental countries.

It appears, that in Europe even as late as the sixteenth century, the medical men were doubtful about the efficacy of the internal use of mercury and other metallic preparations, whilst the Hindu physicians established firmly their potency as early as the sixth or seventh century. That the Hindu physicians successfully used such powerful drugs as arsenic, iron and mercury as internal medicine much earlier than their use in Europe, although the Muslim hakims under the royal patronage did not utilize them, will be evident from quotations from *Taleef Shareef* and Ainslie's *Lepre Arabum*.

It appears, therefore, from the foregoing pages that the Hindus were the first to make a speciality in the internal use of mercurial remedies in medicine and also they were the first to introduce the metallic preparations of iron and arsenic as internal medicine. Not only the earlier medical books like the *Charaka* and *Susruta Samhitas*, but the later Tantras have eulogized the efficacy of metallic preparations in internal medicine. In the domain of knowledge regarding

the preparation and use of alkalis, the Hindu Chemists were much in advance of their European *Confreres*. The same process was known in the eleventh century in Europe.

Equipment of a Chemical Laboratory.

The Hindus had devised quite a large number of apparatus, instruments (yantras), etc., in chemical technology, as for example *dola yantram* (for steaming) *patana yantram* (for sublimation and distillation), *valuka yantram* (sand bath), *tiryak patana yantram* (for distillation per descensum), *vidya-dhara yantram* (for extracting mercury from cinnabari, and a host of other arrangements.

Regarding the location and equipment of the laboratory and the persons who should work therein, the following is of interest: "The laboratory (Rasa Sala) is to be erected in a region which abounds in medicinal herbs and wells—It is to be furnished with various apparatus, instruments, etc. The phallus of mercury is to be placed in the east, furnaces to be arranged in the south—east, washing operations in the west and drying in the north-west. The koshti apparatus for the extraction of essences, the water vessels, a pair of bellows and various other instruments are also to be collected as also the threshing and pounding mortars, the pestles, sieves of various degrees of fineness, earth for the crucibles, charcoal, dried cowdung cakes, retorts made of glass, earth, iron and conch shells, iron pans etc. Those who are truthful, free from temptations given to the worship of *devas* and Brahmanas, self controlled and used to live upon proper diet and regimen, such are to be engaged in performing chemical operations. Such herbalists as are not deceitful and are well versed in the know-

ledge of the drugs and plants and in the language of many countries should be employed." (See Rasaratna Samuchaya).

The Hindus were quite good in their knowledge of metals and their extraction from naturally occurring ores. Gold and silver ornaments were in use in the Vedic period. In ancient India, the soldiers used to put on coats of mail and metallic helmets. Iron, lead, and tin are mentioned in the *Yajur-Veda*. The following lines from the Chardogya Upanishad (IV. XVII. 8) show that the Hindus had fairly clear notions about the formation of alloys: 'As one binds gold by means of *lavan* (borax), silver by means of gold, tin by means of silver, lead by means of tin, and iron by means of lead'. The following lines from the Greek writer Megasthenes who declared that the Indians were skilled in the arts are of considerable interest—"Underground numerous veins of all sorts of metals, for they contain much gold and silver, and copper and iron in no small quantity and even tin and other metals, which are employed in making articles of use and ornaments, as well as the implements and accoutrements of war."

Expert Knowledge in Metallurgy.

It has now been recognized by everybody that the Hindus were experts in preparing high class steel. The preparation of the well-known and highly estimated Damascus blades filtered from India to Persia through the Arabs. 'Even now steel of the first quality is obtained from Chennapatna in Mysore State.'

The Kutub pillar (iron pillar 24 ft. long and 6 1/2 tons in weight) of Delhi which is over 1500 years old is a source of great admiration to everybody. The great French scientist

H Le Chatelier in his University lectures at the Sorbonne always spoke highly about the wonderful quality of steel manufactured in India. The following lines from Fergusson are of great interest in this connection.

"It has not, however, been yet correctly ascertained what its age really is. Our own conviction is that it belongs to one of the Chandra Rajas of the Gupta dynasty, either subsequently to A. D. 363 or A. D. 400. It opens our eyes to an unsuspected state of affairs to find the Hindus at that age capable of forging a bar of iron longer than any that have been forged even in Europe upto a very late date, and not frequently even now.

"It is almost startling to find that, after an exposure to wind and rain for fourteen centuries, it is unruined, and the capital and inscription are as clear and as sharp now as when put up fourteen centuries ago."

Sir Robert Hadfield, the great English authority on metallurgy, makes the following significant remarks on this topic.

"Indeed it is only within the last century or so that any European iron master could have undertaken to produce such a forging. The only explanation of this wonderful specimen of iron is that it must have been welded together in sections though there are no signs of it on the pillar itself. The pillar is practically pure iron, as will be evident from the following analysis by Sir Robert Hadfield:—

C	Si	S	P	Mn	Fe	Sp. Gr.
0.080	0.046	0.006	0.114	Nil	99.720%	7.81

The huge iron girders at Puri and the ornamental gates of Somnath, and the twenty four feet iron gun at Narwar are excellent samples of Hindu skill in metallurgy.

Regarding the Metallurgy of zinc, Sir. P. C. Ray writes in his History of Hindu Chemistry as follows:

"The extraction of zinc from the ores can be followed in every detail from the account left to us both in Rasarnava and Rasaratnasamuchaya.

"Rasaka is mentioned in Rasarnava as the mineral which turns copper into gold. We have also in the succeeding couplets a process described for the reduction of the ore. This process is so elaborately given in Rasaratnasamuchaya that it may be quoted almost verbatim in any treatise on modern Chemistry; it is practically the same as the distillation per descensum. The flame of bluish tint issuing from the mouth of the crucible indicates the combustion of carbon monoxide, so often observed in metallurgical operations. Rasarnava (about 1,200 A. D.) describes fairly precisely the coloration of flames and their salts are introduced in them. Copper yields a blue flame; that of tin is pigeon coloured; that of lead is pale-tinted; that of iron is tawny; that of 'peacock' ore (sayaka) is red.

It is a remarkable phenomenon, but rather difficult to explain satisfactorily, that for a period extending over seven hundred years the progress in Chemistry and Medicine in India was insignificant.

It is well known that Science and Medicine developed considerably in the Universities and hospitals attached to the Buddhist monasteries at Pataliputra, Taxila, Sarnath, Nalanda, Vikramssila and Udantapura between the fifth and the eleventh century A. D. According to Kern (*A Manual of Indian Buddhism*), during the invasion of India by the Mohammedans in 1200 A. D. the monasteries at Udantapura and Vikramssila were destroyed. The monks were either killed or they fled to other parts e. g. Nepal, South India, and Burma, and thus the progress of science practically came to an end from the land of Indian Aryans, as there was no security and settled state of affairs and the people were in constant dread owing to the ravage of repeated invasions.

Chemistry in Modern India.

In the eighties of the last century the two Indian pioneers, Sir J. C. Bose and Sir P. C. Ray, made a pilgrimage to Europe to learn scientific methods in the Universities of Cambridge and Eningburgh respectively; They returned to our land and for over forty years they have been initiating and inspiring young men to investigate the mysteries of Nature according to experimental methods. In the last quarter of a century, notable advances have been made in this country and flourishing schools of Chemistry have developed at many centres.

In recent years, the analysis and isolation of active principles of Indian medical plants have attracted the attention of several chemists and medical men in this country, viz, Col. Chopra, S. Ghosh (Calcutta). S. Dutt and his pupils N. N. Ghatak, A. C. Roy and J. B. Lal (Allhabad), B. B. Dey (Madras), P. C. Guha (Banglore), Sri Krishna (Dehra Dun), S. Siddique (Delhi), J. N. Ray (Lahore), Manjunath (Bangalore) and others.

Many synthetic organic compounds with important medical applications have been obtained by U. N. Brahmachari (Calcutta).

For "India's contribution to chemical knowledge" we are indebted to Sri N. B. Dhar, D. sci. (Lord and Paris) F. I. C. I. E. S. for his excellent essay in the Cultural Heritage of India Vol. III. and his co-workers and B. N. Ghosh and H. K. Sen

V**(The Mahammadeya Yuga.**

1000-1700 A. D.

[CONTENTS-Influence of Vernaculars-Names of Authors and their Works belonging to this period-Some Edicts a realting to Hospitals in Hindusthan]

This period extends from about 1000 A. D. to 1700 A. D. The History of Aayurveda during the Muslim rule is yet to be written. There is no doubt that the medical science enjoyed the patronage of the Hindu Kings as also of the Muslim rulers. During this period Rasa Sastra enormously developed and many books on this branch of Science were composed and the use of mineral preparations in therapeutics was very prevalent. Extensive use of examination of patients by pulse in the diagnosis of diseases was a special feature of this period.

Influence of Vernaculars.

From the year 1000, the influence of Telugu poets was felt in the Andhra Country and in fact by the year 1500 almost all the Sanskrit works were translated into Telugu. Similarly throughout Hindusthan. Aayurvedic works existed side by side both in Sanskrit and in the vernaculars.

Aayurveda according to the Telugu Kavyas has to be studied and the History of Ayurveda in the Aandhra Country should be brought upto date. Dr. Subbareddi of Vizagpatam has done some work in this direction. He published a paper in the Silver Jubilee Number of The Journal of the Telugu Academy.

Names of authors and their Works of this Period.

* In the year 1000 A. D. a book on Anatomy by name *Sareera padmini* was written by Bhaskara Bhatta. In the year 1040 Chakrapani wrote commentaries on Charaka and Susruta and also an independent medical book. During these years

* Prior to this date and on the authority of reliable and available evidence, we can put Diddhabala, the well known great Commentator of Chareka Samhita hailing from the land of Five Rivers in the 5th or the 6th Century A. D.

Vrinda has composed a book of his own. In the year 1050 Gayadasa wrote Nyaya Chandrika, Nidana and Sareera Dalhana a contemporary of Chakrapati wrote a commentary on Susruta Samhita by name Nibandha Sangraha. We learn from Dalhana's commentary that Brahmadeva had written some commentaries (1089). In 1111 Maheswara wrote two medical works dealing with Nidana and Chikitsa, In 1220 Aruna Datta wrote a commentary on Ashtangahridaya by name Sarvangasundari, In 1240 Vijaya Rakshita and his pupil Srikanta Datta wrote a commentary named Madhukosa on Madhavanidana. In 1260 another commentary on Madhavanidana by name Aatunkadarpana was written by Vachaspati.

Regarding the date of the author of Madhavanidana i. e. of Madhavakara historians differ. Some place him in the 7th Century A. D. while others hold him as the brother of Sayanacharya the famous-commentator on Vedas. As commentaries seem to exist on Madhavanidana as early as the 13th Century, beyond doubt, he must have existed in the early centuries. To whatever date the author may belong the popularity and importance of Madhava was well known from popular oft quoted verse:—

"Nidane madhava Sreshtah, Sootra Sthanetu Vagbhatah"

Sareere Susrutah Prokta Charakastu Chikitsake".

Rasaratnakara a work dealing almost wholly of mercurial preparations was probably published in the 14th century. Probably in the same century, Kotturu Basavaraju also wrote 'Basavarajeeyam' while Indrakantham Vallabhachari wrote his 'Vaidya Chintamani'. These three authors were probably Andhras as their texts are very popular in Andhra Desa and as their original manuscripts are largely available in the Telugu script. They used preparations of mercury arsenic, opium and several new drugs.

In the year 1420, Sarangadhara wrote a concise medical book called after his name in which both Vaidika as well as Rasa Sampradaya were adopted. This is an excellent epitome of the previous Ayurvedic literature. Three commentaries exist on this book-1, Dipika by Audhamalla, 2, Gudarthadepika by Kasirama Pandita and 3, Ayurveda Deepika by Rudrabhatta whose dates are not definitely known.

About the year 1550, Bhavamisra wrote a voluminous compendium by name 'Bhavaprakasa' in which he introduced many foreign drugs that were imported at that time. He freely used mineral preparations that were abundantly in vogue thus becoming one of the forerunners of the present day Chromo Therapy.

Though other branches of medicine did not develop much during this period, Materia Medica developed to the highest extent.

Madanapala who lived during the early years of this period, wrote a Nighantu after his name, Narahari a contemporary of Madanapala wrote another book called Abhidana Chudamani which is also called Raja Nighantu. Some place Narahari in the 7th Century A. D. After these authors another by name Shodhala wrote another book on Materia Medica, Chikitsasaram by Gopala Doss was written at this time. He was probably an Aandhra. In the year 1627 Moreshwara Bhatt wrote a book called Vaidyamrita. All these authors have included in their Texts all new and foreign drugs that were imported into India at their times. In the year 1633, Lolambaraju who also was probably an Aandhra wrote Lolambarajeeyam otherwise known as Sadvaiddya Jevanam. In 1670, Hastama Suri wrote Vaidya Vallabha. He was a Jain. In 1676, 'Yogarathnakara', a very popular compilation dealing with all the Ashtangas was written by Nayanasekhara. But opinion is divided among scholars regarding the authorship and nativity of the author of 'Yogarathnakara'. As the first manuscript of Yogarathnakara was found in Telugu script, it is probable that

HISTORY of AAYURVEDA] **Some Edicts** **327**

whoever may be the author, he should have belonged to the Aandhra Country.

There was a great interchange of thought between the Hindu and Mohammadan physicians and many Unani books were compiled during the closing years of this period by the Mahommadan physicians who adopted from Aayurvedic looks * Aayurveda was thus patronised by the Muslim rulers.

Some Edicts.

The following Edicts are recorded as belonging to this period:—

1. The Edict dated 1067 A. D. by Veerachola Maharajah of Chola Desa gives details of a hospital containing 15 beds for the use of the students of the college attached to the temple of Venkateswara in the village of Tirumakudal in Chengalput District. An account of the working of the hospital, of the grant given to it and the lines on which it was maintained are given in the Edict.

2. Another Edict at Malakapuram, Guntur District by Ganapati Deva belonging to 11th Century refers to a grant of 20 acres of land for a Maternity Hospital and another 20 acres for a General Hospital and gives details of the salary paid to the Physician, Surgeon, and attendants and other expenditure incurred on that behalf.

3. Two inscriptions recovered from Srirangam near Trichinopoly are of general interest. One records the establishment by a Heyasala General of the 13th century A. D. of a dispensary as an annex to the Ranganath Temple. The other mentions the consecration in the place of an image of Dhanvantari, the Asculapius of the Hindus.

* Refer History of Aryan Medical Science by Takore Saheb of Gondal.

VI

Aangla Yuga.

From 1700 A. D.

[**COTENTS:** - Progress of Aayurveda in recent years
 Institutions of Aayurveda—Sir Pardy—Lukis eulogisation - Dr.
 Koman's Report—Appointment of the Committee on the Indi-
 genous Systems of Medicine—The Summary and conclusions
 of the reports of the Committee—Pandit Natesa Sastry's dissent
 Note—The All India Aayurvedic Congress—Its Aims and Objects—
 Indian National Congress—List of Presidents of All India
 Aayurvedic Congress—Names of noted Unani and Ayurvedic
 Physicians - Government Institutions - Research Institutions—
 Ayurvedic Educational Institutions - Register of Indigenous
 Medical Practitioners—Indian National Congress—All India
 Ayurveda Vidyapeeth—Private Agencies—A Text Book of
 Aayurveda—The Spirit of Aayurveda—Ethical Code of Ayur-
 veda—Conclusion—A list of available Aayurvedic Books for
 reference.]

This period extends from 1700 A. D. upto the present time. At the time of the advent of the European nations for trade purposes to India, the science of Aayurveda as well as its practice were greatly patronised by the States and the people. In fact there are evidences of several drugs used in medicines and also of prepared medicines such as aphrodisiac preparations being exported to Europe along the trade routes. A close study of this subject is necessary.

Early European explorers studied Indian Botany and Materia Medica with the idea of economic exploration. The subjects will be referred to in the next chapter, namely **Vrikshayurveda**.

Since the aid of the Government was denied to the practitioners of Aayurveda after the firm establishment of British Rule throughout India, their progress was, to some extent, retarded. The science however was taught in the Gurukulas by the learned Professors with their usual devotion to the subject. New literature was also contributed in the shape of Nighantus as mentioned above.

Progress of Aayurveda in Recent Years.*

Reviewing the progress of Aayurveda during recent years it must be said that the results are very disappointing. This period is characterized by the glamour of the student of Aayurveda to imitate the methods of the West without considering whether they are superior to the methods of treatment tested by long and continued use by the Orthodox Aayurvedic Physicians.

Institutions of Aayurveda.

The institutions working for the promotion of Aayurveda in this country may be divided into two classes:—

1. Official or Government Institutions:—That is, those which are worked directly by the Government or with the aid of the Government;
2. Non-official or National Institutions:—That is, those which are worked independently of the Government.

Sir Pardy Lukis's Eulogisation.

As long ago as 1910 the Imperial Government of India accepted the necessity of encouraging Aayurvedic Institutions as a policy during the days of Lord Hardinge on the recommendation of Late Surgeon General Sir Pardey Lukis, sometime Principal of the Medical College Calcutta. and later

* Adopted from Dr. A. Lakshmi pathi's article contributed to the Gôdavari Pushkaram Souvenir 1944.

Director General of the Indian Medical Service, who said thus in the course of one of his public utterances:—"I wish to impress upon you most strongly that you should not run away with the idea that everything that is good in the way of medicine is contained within the ringed fence of Allopathy or Western Medicine. The longer I remain in India and the more I see of the country and the people, the more convinced I am that many of the empirical methods of treatment adopted by the vaidyas and hakims are of the greatest value and there is no doubt whatever that their ancestors knew ages ago many things which are now-days being brought forward as new discoveries. For instance, during the last few years, there has been a considerable amount of talk about what is known as depurating, that is to say, the depriving of the system of salt. This arose from certain experiments carried out by Widal and Javal, as a result of which it is recognized that in all cases of dropsy the greatest benefit can be obtained by restricting your patients to an entirely salt free dietary. There is nothing new in this. This was known thousands of years ago in the East, and any hakim would have told you long before Widal or Javal made their experiments that salt is contra-indicated in all dropsical affections." He was bold enough to say, "Personally if I were ill, I say frankly that I would prefer to be treated by a good vaid or hakim rather than by a bad doctor. I resent strongly that spirit of medical trade unionism which leads many modern doctors to stigmatise all v aids and h:kims as quacks and charlatans, and I shall always be proud of the fact that I was privileged to have the friendship of two such learned men as the late Nawab Shafa-Uddowlah of Fyzabad and Kaviraj Bijay Ratan Sen of Calcutta."

HISTORY of AAYURVEDA] Conclusion of Committee 331

The Government of Madras thereupon appointed Sri Rao Bahadur M. C. Koman L. M. S., to investigate into the efficacy of indigenous drugs and his report thereon was published in the year 1918. But as Dr. Koman was ignorant of the Theory of Tridosha upon which the real efficacy of Aayurvedic treatment is based, his method of investigation was defective. However, he recommended a number of Aayurvedic drugs and prepared medicines that he tried as worthy of adoption and extensive use by Allopathic practitioners in modern hospitals and dispensaries as such a procedure would save much money to the state.

Since then, the Government of Madras decided to appoint a Committee consisting mainly of non-official gentlemen by G. O. No. 964. P. H. dated 10th. August 1921, to report on the question of the recognition and encouragement of the Indigenous Systems of Medicine in vogue in this Presidency with Khan Bahadur Mohamed Usman (now Sir.) as the president. The object of the proposed inquiry is to afford the exponents of the Aayurvedic and the Unani systems an opportunity to state their case fully in writing for scientific criticism and to justify State encouragements of these systems. The committee was actually appointed in G. O. No. 1351, P. H. dated 17th October 1921.

This committee after studying this question thoroughly established finally the claims of Aayurveda for State aid. The following recommendations were made by the Committee.

Summary and Conclusions of the

Report of the Committee.

1. From the standpoint of science, the Indian systems are Logical and Scientific.

2. From the standpoint of Art, they are not self sufficient at present in the surgical line but in the medical line they are quite self sufficient, efficient and economical.

3. In the best interest of science as well as of suffering humanity, it is highly desirable that the followers of Indian Medicine should study the scientific methods of the West and adopt into their system whatever is useful in Western medicine and vice versa.

4. To practise the art of medicine without a study of the science on which the art is based is quackery, whether it is undertaken by the followers of Indian or European medicine: such quackery is always undesirable and sometimes dangerous or even disastrous.

5. It is only through the promotion of the Indian Systems of Medicine that under the present circumstances, the State can hope to achieve the ideal of bringing medical relief within easy reach of all people—especially in the rural areas.

6. It is therefore incumbent upon the state to explore to the full the possibilities of the Indian Systems of Medicine with a view to make them wholly selfsufficient and fully efficient in both its Medical and the Surgical branches.

7. The first and most important step that is now to be undertaken by our Government is to make an immediate declaration of its policy to accord State recognition and State encouragement to the Indian Systems of Medicine, viz., the Aayurveda, the Siddha and the Unani.

For a population of 42, 318, 985 inhabiting the Madras Presidency, the total number of medical practitioners following

the European system is not more than 3,000, while the number following the Indian systems is not less than 21,000, that is to say, there are at least seven practitioners of the Indian systems to every one practitioner of the European system.

8. The principle underlying medical registration is not foreign to Indian tradition.

Medical registration is necessary in the best interests of both the public and the practitioner.

The purpose of medical registration is only to discourage the pretentious ignorance and dishonest practice of any particular system whatever it may be.

Absolute prohibition of unregistered practice as obtaining in many states of the United States of America is not suitable for our present conditions; what may now be attempted is only to secure certain rights and privileges to the Registered as in the United Kingdom.

9. The establishment of an adequate number of medical schools and colleges from which a sufficient number of efficient practitioners may be expected to be sent out every year is the first step that ought to be undertaken before medical registration is introduced in respect of the practitioners of Indian Medicine.

10. The General Council of Medical Registration of practitioners of the Indian systems must be quite distinct from and independent of the existing Madras Medical Council. It should be empowered to directly supervise both medical registration and medical education.

The first register of indigenous practitioners shall include the names of all practitioners who apply for registration within a special period from the passing of the Registration Act.

The Madras Medical Registration Act IV of 1914 should be amended on the lines of Section 26 (2) of the U. P. Medical Registration Act III of 1917 so as to provide for free professional association between practitioners of the Indian and the Europeans systems of medicine; a similar provision should also be introduced in any legislation of practitioners of Indian systems.

11. It is a mistake to think that encouragement of Indian Medicine consists merely in promoting the investigation of a few indigenous drugs. It is likewise a mistake to think that a knowledge of the science of Indian Medicine is not necessary for a doctor who is to investigate the indigenous drugs.

12. Foundation of Chairs of Indian Medicine, in existing schools and colleges of Western Medicine, may be useful in helping Western trained doctors to acquire a knowledge of the essentials of Indian Medicine, but that is not enough to ensure the progress of Indian Medicine itself.

13. The sine qua non for the ordered progress of our Indigenous systems is the establishment of a new Department of Indian Medicine, directed by a Commissioner of Indian Medicine working under the Minister holding the portfolio of Medicine and Public Health. It is desirable that the general policy of this new department is directed by a General Council of Indian Medicine.

14. It is necessary to train as rapidly as possible, a large number of qualified practitioners of Indian Medicine who will be fully self-sufficient and efficient to deal with both medical and surgical ailments; to this end, it is highly desirable that students of Indian Medicine should come into actual touch with the practice of Western methods especially on the surgical side.

To attain the object specified in the above paragraph, we think it necessary that the Government should immediately

establish colleges and schools, hospitals and dispensaries for Indian Systems of Medicine. If the Government find it impossible to do so under the present conditions, we suggest as an alternative, that existing centres of European medical relief should be made to subserve the interests of Indian systems of medicine also.

In the best interests of science and suffering humanity it is best that the followers of each system should appreciate and learn the excellences of the other; to this end it is highly desirable that the followers of either system should learn to ring out the existing feelings of mutual dislike and unhealthy isolation and ring in the spirit of mutual helpfulness and fraternal co-operation.

One of the greatest needs of the hour is the willing and enthusiastic co-operation of Western trained doctors sufficiently learned in Indian Medicine as to be capable of visualising its immense potentialities and therefore zealous in helping Indian Medicine to rapidly regain the ground it has lost, especially in the field of surgery.

Under our present conditions two types of practitioners are required to be trained with two standards of proficiency, a higher and a lower, the principal aim in the training of the latter being the rapid multiplication of fairly efficient practitioners who may be expected to settle down or take up employment in rural areas, while the chief aim in the training of the former should be to provide for high grade general and consultant practice, specialization, teaching and research. Suitable provisions should also be made for allowing the lower grade practitioners to qualify themselves for the higher standard of proficiency.

Pandit K. G. Natesa Sastri's Note.

These recommendations were unanimously accepted, Pandit K. G. Natesa Sastry one of the members of the Committee, however, differed from the majority of the Report and added a dissenting note to the following effects.

"While appreciating the Secretary's Memorandum as a brilliant master piece of a sound calm, erudite and impartial enquirer after Truth he was of opinion that the indigenous Vaidya without coming in contact with the lustre of Western Medical knowledge is better able to understand the system which he follows and expounds with greater force than his brother Vaidya with a knowledge of the Allopathic system.

It must not be understood that I belittle the value of a knowledge of Western medicine, but I do not want that pure vaidyas should be considered of less value than a medical man of a combined knowledge. It is possible that a combination of the western knowledge with the eastern leads sometimes to disastrous results. Though truth is always the same without racial or geographical limits, yet the difference in the ideals and modes of thinking in the East and the West is so great that impact rather disintegrates than strengthens and fuses the two systems. Exactly therefore it is that many of the witnesses who appeared before our committee were very strong in emphasising that they do not want that the scientific basis of medicine as obtaining in the West should be incorporated in the indigenous systems but they must be allowed to think for themselves in terms of their own scientific terminology which has withstood the ravages of time. What then they really want is that the art, especially in surgery in all its various branches, which had been gradually neglected and finally disappeared owing to various causes which began to operate directly after the beginning of the decline and downfall of India as political force from the Mahabharata war 5.060 years ago—that art should be revived so that Ayurveda will again see its palmy days as of yore. I desire that the art should first be revived and when, by that process, Ayurveda is able to stand on its own legs the exponents of the two systems of medicine should come in contact and try

to fuse. If on the other, hand. fusion takes place earlier, the impact will only be, in the thoughtful words of Sir John Woodroffe, 'a conflict of cultures' which will be disastrous to take weaker of the two, the Aayurveda. Absolute fusion can never be achieved; for Aayurveda will never consent to lose its characteristic of thinking in terms of its own peculiar religious philosophy of Satwa, Rajas, and Tamas. Nor will the allopath be converted into an Aayurvedic man unless he surrenders his way of thinking and accepts the other one. To underst and each other a certain amount of equality must be reached. It is therefore that the witnessess were very particular in having the lost art restored as early a possible.

I desire that in the beginning the indigenous medical colleges and hospitals should be maintained separately and away from the allopathic medical colleges and hospitals. I do not share the view that dearth of funds is a bar to achieve this end. It has been pointed out in the main report that something like 57 lakhs of rupees are being expended on the maintainance of the allopathic system. Could not a fifth of this sum to begin with be spent on the ancient systems of medicine which are indigenous to the land and benefits ninetenths of the population? A big cut must be made anywhere in the budget and at least some 10 lakhs should be ear-marked for the indigenous systems of medicine.

As regards the disirability of the knowledge of English in the higher grade of Aayurvedic study, this desirability must be the spontaneous wish of the Aayurvedic men. It must be left to the Aayurvedists to decide whether they want to be in contact with the outer world or not".

We shall consider below how far the above mentioned recommendations were respected by the Government and acted upon by them with any sincerity of purpose.

All India Aayurvedic Congress.

With the renaissance that started along with the national awakening, Aayurveda had its share of progress. The All India Aayurvedic Conference (Alhila Bharata Varsheya Maha Sammelan) was founded in the year 1907 by the late Sankaradaji Sastri Pade and the All India Aayurveda Vidyapith in 1909 with the object of promoting Aayurvedic Science and its practitioners. This name was subsequently changed into The All India Aayurvedic Congress, whose objects and aims are stated as follows:—

Aims and objects of the A. I. A. Congress.

1. To organise all the Aayurvedic practitioners and Institutions with a view to establish a Central Board for the regeneration and advancement of the Aayurvedic Science and practitioners.
2. To bring into contact all the Aayurvedic institutions and foster mutual friendly relations with them and encourage the same to exist between one institution and another.
3. To promote unity and concord amongst the Aayurvedic practitioners by arranging parties, meetings and conferences for their advancement.
4. To organise and hold for the advancement of Ayurveda, conferences, exhibitions, lectures, discourses and establish, start or subsidize where necessary Aayurvedic colleges, schools and institutions, indoor hospitals, outdoor dispensaries, model pharmacies and research institutions.

5. To publish books, literatures, thesis, journals magazines and papers on current and old Aayurvedic topics of utility, research notes and matters of clinical experiences.

6. To encourage the Aayurvedic practitioners in higher studies, advanced researches, discoveries of latent medicinal herbs and experimentations.

8. To strive to start and establish a full-fledged teaching, examining, affiliating and supervising All India Aayurvedic University. To give impetus to the existing 'Aayurveda Vidyapeth' and respect and recognise titles, degrees, diplomas, licenses and certificates or other marks of honour conferred and granted by it.

9. To instruct, erect, raise, equip, maintain, alter and repair Aayurvedic libraries, laboratories, buildings or other constructions, herbal and botanical gardens or groves and to do all other acts which tend to the promotion of study of and training in Aayurveda and to the attainment of the objects of the All India Aayurvedic Congress.

10. To induce Government, local bodies and other authorities to grant such rights, privileges and concessions as may be necessary for furtherance of the objects of the All India Aayurvedic Congress and for the general welfare of the people.

List of the Presidents of the Annual Sessions of the All India Ayurvedic Congress.

No.	Name of the President,	Place at which the annual sessions were held.	Year
1.	Shri Kanwar Saryuprasad Singh Bahadur, Bahraon State, Allahabad	Nasik	1907
2.	Aayurved-Nidhi Shri Ganga Dhar Bhatt, Rajwada, Jaipur.	Panvel (Kolaba)	1908
3.	Mahamahopadhyaya Kaviraj Shri Gananath Sen Saraswati Vidyasagar M. A. L. M. S. Calcutta.	Allahabad	1911
4.	Vaidyaratna Kaviraj Shri Jogindra Nath Sen, M. A., Vidyabhushan, Calcutta.	Cawnpore	1912
5.	Lieutenant Colonel K. R. Keertikar I. M. S. Bombay,	Multra	1913
6.	Ayurvedmartand Shri Pt. Laksh- miram Swam, Ayurvedacharya, Jaipur	Calcutta	1914
7.	Kaviraj Shri Yamini Bhushan Roy M. A. M. B., Calcutta	Madras	1915
8.	His Highness Maharaj Shri Ram Varma, Cochin	Poona	1916
9.	Vaidyaratna Shri Pt. D. Gopala- charyulu, Madras	Lahore	1918

No.	Name of the President,	Place at which the annual sessions were held,	Year
10	Kaviraj Shri Umacharan Bhatta- charya, Benares	Delhi	1919
11	Mahamahopadhyaya Kaviraj Shri- Gananath Sen, Saraswati Vidya- sagar M.A., L.M.S. Calcutta	Indore	1920
12	Kaviraj Haranochandra Chakravarti Rajvaidya, Rajshahi (Bengal)	Bombay	1921
13	Shri Pt. Krishna Shastri Kavade, B. A. Poona	Rajahmundry	1922
14	Vaidyaratna Kaviraj Shri Jogindra Nath Sen M. A., Vidya-Bhushan Calcutta	Colombo (Ceylon)	1923
15	Ayurvedmartand Vaidya Shri Yadav Ji Trikam Ji Acharya, Bombay	Haridwar	1925
16	Mahamana Bharatbhushan Shri Pt. Madan Mohan Malviya, Vice- Chancellor and founder of the Bena- res Hindu University, Benares	Jaipur	1925
17	Ayurved Panchanan Shri Pandit Jagannath Prasad Ji Shukla, Prayag	Patna	1927
18	Shri Pt. Krishna Shastri Devadhar, Nasik	Fatehpur (Shekhawati)	1928
19	Captain G. Shrinivasa Murty, B. A., B. L., M. B., and C. M. Vaidyaratna, Madras	Nasik	1929
20	Vaidyaratna Pandit Ram Prasad Sharma, Rajvaidya, Patiala	Karachi	1930

No.	Name of the President	Place at which the annual sessions were held,	Year
21	Mahamahopadhyaya Kaviraj Shri Gananath Sen Saraswati, Vidyasagar. M.A., L.M.S. Calcutta	Mysore	1931
22	Ayurvedmartand Vaidya Shri Yadav Ji Trikam Ji Acharya.	Bombay	1932
23	Shri Dr. A. Lakshmipathi, B. A. M.B. and C. M. Bhishagratna.	Madras	1933
24	Bhishagmani Kaviraj Pratapi Singh Ji Rasayanacharya, Hindu University. Benares	Shikarpur (Sind)	1934
25	Vaidya Shastri Pranacharya Shri Narayan Shanker Dev Shanker, Ahmedabad	Benares	1935
26	Vaidyabhushan Shriyut Pt. Shri Govardhan Sharma Chhangani Bhishak-Kesari Nagpur	Ahmedabad	1936
27	Vaidya-Panchanan Shri Pt. Ganga Dhar Shastri Gune Ahmednagar	Nagpur	1937
28	Shri Pt. Shiv Sharma Ayurvedacharya. Lahore	Bombay	1938
29	Shri Pt. Shiv Sharma, Ayurvedacharya. Lahore	Jodhpur	1939
30	Vaidyaratna Shri Pt. Vraj Vihari Ji Chaturvedi, Bankipur (Patna)	Lucknow	1941
31	Rajvaidya Pt. Jivaram Kali Doss Sastri, Gondal (Kathiawad)	Lahore	1942
32	Kaviraj Manindra Kumar Mukhopadhyaya, B. A. Ayurveda Sastri, Calcutta	Rajkot (Kathiawad)	1943

attended 7, 8, 10, 13, 15, 16, 17, 19, 21, 23, 28, 29, 30, 31, 32,

Reputed Aayurvedic and Unani Practitioners.

The late Kaviraj Gangadhara Sen Kaviratna, of Jalpalkapataru (Commentary on Charaka) fame; Kaviraj Dwaraka Nath sen Kaviratna, the father of Kaviraj Yogendra Nath sen; Kaviraj Viswanatha Sen, father of Kaviraj Gananth Sen are among the honoured names of reputed Aayurvedic practitioners.

The late Hakim Ajmal Khan of Delhi enjoyed a great reputation as an Unani practitioner.

However, this list has to be enlarged *

We shall here now examine how the official and the non-official institutions contributed to help the progress of Aayurveda during recent years.

Government Institutions.

In furtherance of their acknowledged policy of encouraging the Aayurvedic Science, the Government started or promoted or helped three kinds of institutions. But, it was not a whole hearted support or help as it showed a step-motherly attitude in all these directions.

* For names of reputed Aayurvedic Practitioners, Rajata Jeyanti Grandha of the Aayurveda Maha Sammelan may be consulted.

1. Research Institutions.

The object of these institutions was to conduct research in the analysis of indigenous drugs with the object of obtaining the active principles of the drugs and to prepare such medical preparations as could be easily exploited for the benefit of the commercial interests. This research required very costly laboratories and establishments and it was found to be an uphill task to achieve any good results without counting upon active support of the practising Aayurvedic physician who possessed the key to the valuable clinical material with him. This method of study did not help in the advancement of the science of Aayurveda in any way.

2. Aayurvedic Educational Institutions.

Educational Institutions in India in general are of two kinds.

1. The Real Indian Method viz. of The Individual system i. e. The Gurukala System (Tols) is the one in which a Guru or teacher undertakes the complete responsibility of the physical, intellectual and social growth of the students admitted by him for education. He provides them with free boarding and lodging and holds responsibility in every way for their behaviour as units responsible for the civilisation of the nation without any expectation of any return from them. The Guru is in turn provided by the public with all the necessaries of life. This teacher thus provided lived as a model of "simple living and high thinking". He was the pride of Hindusthan (See Chap. 3),

Trained under such environments, the students of Aayurveda developed as custodians of National Health and Missionaries of Humanity.

2. The modern Method of Mass Education where all classes of students (intelligent, moderate and indifferent,) are classed together and taught by paid teachers in urban surroundings as in the present day Colleges and Schools.

Aayurvedic Colleges and Schools were started in all provinces by the Government or with the aid of the Government but they proved a failure in the matter of advancing the science of Aayurveda as the curriculum of the student was overloaded with Allopathic subjects. They, however, produced a large number of the so-called Aayurvedic practitioners, who are not only not proud of their own Science but who are satisfied to occupy a subordinate rank as imitators of the Western Medical Practitioners.

3. Register of Indigenous Medical Practitioners.

The Government of almost all provinces opened their own Registers of Indian Medical Practitioners, to create some restrictions to the practice of the numerous Aayurvedic practitioners who catered to 90 per cent of the population. These Boards of Indigenous Medicine constituted in each province remained powerless or became puppets in the hands of unsympathetic provincial Bureaucratic Governments.

Indian National Congress.

The Indian National Congress was naturally bound to encourage the indigenous Science, Art, Industry and Trade, namely, Aayurveda and passed the following resolution, No. 11 at its annual session held at Nagpur in the year 1920.

"This Congress is of opinion that having regard to the wide prevalence and generally accepted utility of the Ayurvedic and Unani systems of medicine in India, earnest and definite efforts should be made by the people of this country to further popularise these systems by establishing Schools, Colleges and Hospitals for instruction and treatment in accordance with the Indigenous systems". But as the leaders of the Congress were most of them educated at Foreign Universities and still looked to the West for inspiration, they were not only not bold enough (except for a few honourable exceptions) to take any decisive steps for encouraging the Ayurvedic Science or the connected industries, but when they came into power in the years 1937-1939, it was very unfortunate that the Ayurvedic Portfolio had to be controlled in two major provinces, by two full blown Allopathic Doctors, who probably presumed that they knew everything about Ayurveda and began to dictate their policies to the detriment of the Indigenous systems. Therefore the epoch making report of the Usman Committee, (1921-1923) whose recommendations were already noted above was considered only fit for the waste paper basket. The Madras minister declared that the system of Ayurveda was truncated and was unfit for modern use. There was a great public agitation against this. The lady Minister Mrs. Vijia Lakshmi Pandit of U. P. however took up the cudgel and made an effective speech supporting the claims of Ayurveda in the Legislative Council of the United provinces. Something tangible would have resulted and the popular will would have been established in favour of supporting the hoary and yet vigorously lying science of Ayurveda but meanwhile the Congress Ministries collapsed suddenly, Mahatma Gandhi whose influence was not much felt in the Parliamentary programme was no doubt a well wisher of Ayurveda as he was of everything which helped towards prosperity of the Indian Villager. He was brought up as an admirer of Ayurveda in his childhood. He thoroughly believed in the efficacy of many Ayurvedic herbs and medicines but as regards its scientific

basis, he said that he maintained an open mind and was ever ready to learn and be convinced when an opportunity was given to him. * "His own words are." I like Aayurveda. I shudder to think that Allopathic Medicines would be dumped into the villages. We cannot afford it. We do not want them. There is already much that is known and much more can be studied from the laboratory of nature. I say I like Aayurveda. I wish to love Aayurveda. You must make me love Aayurveda.

"One day, he said, that if I prove to his satisfaction the truth about the fundamental basis of Aayurveda he would serve Aayurveda whole-heartedly, with as much zeal as he served the cause of Truth and Non-Violence.

All India Aayurveda Vidyapitha.

The All India Aayurveda Mahamandal is the Executive Body or the Standing Committee of the All India Aayurvedic Congress. Its influence is felt in all the Provinces through its members who are reputed Practitioners of Aayurvedic medicine through-out India and through thousands of other practitioners who possess diplomas obtained by annual Examinations held under the control of the All India Ayurveda Vidya Peeth. These examinations are in three grades:—

1. The Acharyas who possess a high proficiency in Sanskrit.
2. The Visaradas who possess a good working knowledge of Sanskrit.
3. The Bhishaks who pass an examination held with Vernacular as the medium of Instruction.

The Maha Mandal has Provincial Branches and other affiliated Institutions which work more or less autonomously carrying out the aims and objects of the parent body. The

* Extracted from Dr. A. Lakshmipathi's interview with Mahatma Gandhi on 13-12-39.

Aandhra Province in particular has been very active in all efforts for the promotion of Aayurveda and the first Aandhra Aayurvedic Conference was held in the year 1917 at Bezwada with the late lamented Vaidyaratna Pandit D. Gopalacharyulu as president. Since then 22 conferences were held in various districts and the next 23rd Conference will be held at Nidadavolu in the first week of December, 1944. The Mahamandal as well as the Provincial Mandals maintain Registers of Membership enlisting Vaidyas with minimum professional qualification of Laghu Thrayi. Thus the medical profession is organised, and its interests are promoted and guided by these unofficial bodies which work without the aid of any Governmental favour.

Private Agencies.

There are many private institutions which encourage Aayurveda by establishing Colleges and Schools, by conducting Pharmacies where medicines are prepared on a large scale for sale and by running free dispensaries where hundreds of patients are treated free of all cost.

Many translations of original Sanskrit and English medical works were published during recent times and some valuable commentaries on the classical Text-Books of ancient authors were also published (See Silver Jubilee Number of All India Ayurveda Mahamandali and Dasama Varshika Sanchika of Aandhra Vaidya Mandali).

Although substantial help was denied by the Government, the general majority of population looked to the Aayurvedic system of Medicine in all times of need. It is in the soil deep-rooted and is ever ready to burst forth and give relief to the suffering humanity as in times of yore.

A Text Book of Aayurveda.

A Conference of learned Aayurvedic teachers and reputed practitioners of Aayurveda was held for sixty days (from 22-9-1941 to 20-11-41) under the name of Aayurveda

Adhyapaka Siksha Parishad, at Avadi near Madras, where discussions were held on various intricate subjects relating to the Theory and Practice of Aayurveda. As a result of this Dr. A. Lakshimipathi B. A., M. B., C. M., Bhishagratna, of Madras is now trying to bring out A Text Book of Aayurveda-called 'Aayurveda Siksha'-a huge compilation dealing with different branches of the Science, in English, Telugu, Sanskrit and other languages with the help of a competent body of authors. This is expected to help further studies in Aayurveda. The students of Aayurveda will then be original thinkers and research workers instead of being mere imitators of the mercenary subordinate practitioners of the modern Western system who have necessarily to look to foreigners for their supplies of medicines and for every kind of inspiration and help.

The Spirit of Aayurveda. *

Mahamahopadhyaya Kaviraj Gananatha Sen of Calcutta says 'The spirit of Aayurveda is the spirit of science and something more. It is the spirit of observation and experimental research, reinforced by the tsanscendental intuition (divyajnana) of the rishis. This last is no doubt the special characteristic of Aayurveda no parallel of which is to be found in the West.

Respect and eagerness for the assimilation of truth 'from whatever source it might come' was also the key-note of Aayurveda. Charaka enjoins universal comradeship in our journey towards truth and speaks eloquently about it,

" *Amitra schapi dhanyam yasasya mayushyam paushtikam
laukyaam (laukikaam) abhyupadisaato vachah srotavyam
anuvidadhavyam eheti* " (Cha. Vim. Ch. 8-16)

Aaptagama or the authoritative writings of the rishis (seers) was no doubt greatly respected, but the term is defined

* Extracted from the contribution of Sri Mahamahopadhyaya Kaviraj Gananatha Sen. M. A. L. M. S. Calcutta to The Cultural Heritage of India—Vol. III.

in the following words which deserve to be written in letters of gold.

Aptagama means the Veda ; but such Sastra, as is based on observation and experiment and the deductions of which have been tested as sound by competent judges is also aptagama."

*"Tatrap tagama sthavad vedah, yaschanyopi kasehit
vedardha davi pareelah parekesha kaih praneelah
sishtanumato lokanugraha pravrittah sastravadah
sachaptagamah"*

(Cha, Sutra, Chap. 11—28.)

The development of the special senses and perhaps of the sixth sense, as some scientists of the present day call it, was the means to that noble end. The physician was required to lead a life of austerity, solemn meditation and sacrifice. The physician should with the aid of the bright light of the lamp of knowledge enter the inner-most soul of the patient and he who cannot so enter cannot treat his patients satisfactorily.

"Jnana buddhi pradeepena Yo navisati tatwavit (Yogavit)

Aaturasyaanta ratmanam na sa roganam schikitsati"

Cha. Vim. Ch. 4-14.

Medical Ethics in Ayurveda.

The ethical code of Ayurveda is different from the medical ethics of the present day. The following passage of Charaka formulates the ethical code of Ayurveda,

"You should seek the happiness of all beings. Every day, standing or sitting, you should try to heal the sick with your whole heart. You should not demand too much from your patients even to maintain yourself. You must not touch another man's wife even in thought, nor hanker after others' wealth. You should be sober in dress, and temperate. you must not commit a sin nor be an abettor of it and you must speak words that are gentle, clean, and righteous" and so on.

**Sarva prana bhritham ssarma assasitavyam; aharaharu
 tishtata chopavisata cha, Sarvatmana cha aturanam arogyaya
 prayatitavyam; Jeevita hetorapi chatur ebhyonabhi drogdhavyam;
 manasapi cha para streeyo nabhi gamaneeyah; tadha sarva meva
 paraswami; Nibhrita vessa parichchadena bhavitavyam; Assaun-
 denapapena apapa sahitenat+ sslakshana ssukla dharmya
 ssarmya dhanya sat ahita mita vachasa, Dessakala, vicharina,
 smriti-mata. Jnanottha nopakarana sampatsu nityam yatna
 vata cha.** Cha, Vim. Chap. 8—13.

I need hardly add that the ethical code known as medical ethics now is only the rules of conduct enjoined by a trade guild for the protection of a fraternity but make to the most of its profession for secular purposes. the ideal of Aayurveda was very different.

I appeal to my country men to awake to the necessity of the restoration and development of Aayurveda for their own benefit and for the benefit of the country. It is not merely patriotism that should be their spring of action. I do not hesitate to assert that Aayurveda can give many things to the Western world and many modern discoveries are only rediscoveries of ancient truths."

Conclusion.

The Historical Survey of Aayurveda has many lessons to teach. The first and foremost among them is,

(1) That Aayurveda is the father of all Medical Sciences on this earth.

(2) That the ideal placed before the Medical man is one of Charity to others. The physician's own happiness lies in his satisfaction of being helpful to all other living creatures. "*Natmardham-napikamardham adhabhoola dayam-prati*:"

Cha. Cha. 14-59.

(3) Even in these days of evergrowing scientific advances, Aayurveda has much to teach the most forward of scientists. Even in the interests of the advancement of modern sciences, Aayurveda has to be studied critically and from its fountain sources in Sanskrit and from the existing Aayurvedic scholars.

(4) The system of Gurukula teaching, which provided for the proverbial and universal literacy of the ancient Hindus has to be revived and extended to Aayurvedic students so as to suit modern conditions.

(5) It is the duty of the state to give every opportunity for the development of this National Art, Science and Industry which is responsible for many of the special features in the civilisation of this country.

(6) All our attempts for improvement should be to supplement Aayurveda but not to supplant it by the introduction of theories which are ever-changing and which are antagonistic to the basic and fundamental principles of Aayurveda, of remedies, which are daily introduced into the market by booming advertisements of large vested interests and found to be only ephemeral (short-lived).

(7) Aayurveda has lived long enough to withstand many severe tests of modern science and will continue to live and shine brighter by contact with the Western Sciences and grow stronger.

(8) Though old, Aayurveda is ever new. "*Puranamopi Punarnavam*"—Charaka—Siddhistana.

Reference Books in English**History:**

- 1 Rigveda 2 Vols.—By Griffith.
- 2 Atharvaveda 2 Vols.—By Griffith.
- 3 A Short History of Aaryan Medical Science—By Takore Saheb of Gondal.
- 4 History of Indian Medicine 4 Volumes—By Dr. G. N. Mukhopadhyaya B. A., M. D.
- 5 Surgical Instruments of the Hindus—By Dr. G. N. Mukhopadhyaya.
- 6 History of Hindu Chemistry—By Sir P.C. Ray.
- 7 History of Medicine—By Cumstone.
- 8 History of Indian Philosophy 2 Volumes—By S. N. Das Gupta.
- 9 Antiquity of Hindu System of Medicine—By Royle.
- 10 Studies in the Medicine of Ancient India—By A. F. R. Hoernle.
- 11 History of Chinese Medicine—By Wang and Wu.
- 12 Commentary on the Hindu System of Medicine—By Dr. Wise.
- 13 System of Aayurveda—By Siva Sarma.
- 14 Introduction to Kasyapa Samhita—By Pandit Hemaraj Sarma.
- 15 History of Ancient Sanskrit Literature—By Keith.
- 16 Antiquity of Hindu Medicine—By David, C. Muthu, M.D.
- 17 Positive Sciences of Ancient Hindus—By B. N. Seal.
- 18 Aaryan Rule in India—By E. B. Harvell.
- 19 The Cultural Heritage of India 3 Volumes—By Ramakrishna Mission.
- 20 Arthashastra of Kautilya—By Syamasastri.
- 21 Kamasutra—By Vatsayana.

Philosophy:

- 1 Sankhya Karika of Eswara Krishna—By John Daviss,
- 2 The Sankhya Aphorisms of Kapila—By James R. Ballantyne,
- 3 Sarva Darsana Sara Sangraham.
- 4 The Six Systems of Hindu Philosophy,—By Maxmuller,
- 5 Hindu Philosophy—By Sir S. Radhakrishnan.
- 6 Gita Rahasya (Sri Lokamanya)—By Balachandra Sita Ram Sukthankar,
- 7 Shat Chakra Nirupana.—By Arthur Avalon,

Botony and Materia Medica:

1. Botanical observation on select plants—By Sir W. Jones,
2. Materia Medica of Hindusthan,
3. Flora Indica—By Roxburgh,
4. Bengal Pharma Copois—By Shanghassy,
5. Pharmacopoeia of India—By Warring,
6. Supplement of Pharmacopaea of India—By Mohideen Sheriff,
7. Materia Medica of Madras,
8. Materia Medica of The Hindus—By V. C. Datt
9. Pharmacopaea of India 3 Vols.—By Dymock,
10. Materia Medica of Western India—By Dymock
11. Pharmacopoea Indica—By Warden and Hooper
12. A Dictionary of The Economic Products of India—
By Bir George Well
13. Pharmacopoea—By Fluckigar and Hanbary.
14. Indigenous Drugs of India—By Col. B. N. Chopra.
15. Indian Materia Medica—By K. M. Nadkarni.
16. Indian Medicinal Plants—By Kirtikar and Vasu.
17. Catalogue of Medicinal Plants—By John Fleming.
18. Indigenous drugs of India—By J. G. Ghose.
19. Materia Medica—By P. N. Khory.
20. Vanaspati—By Muzumdar.

General :

- 1 Comparative study of Aayurveda—By Col. P.C. Chitale.
- 2 Comparative study of Aayurvedic Nosology — By Dr. Ghanekar
- 3 Germ Theory ..
- 4 Aayurvedic Conception of Urine— ..
- 5 Report of the Committee on the "Indigenous Systems of Medicine Madras—2 Volumes; (3 Vols.
- 6 The Ayurvedic System of Medicine By Kaviraj N. N. Sen Dr. H. C. Sen.
- 7 Treatment of Tropical diseases with indigenous drugs—By Dr. H. C. Sen. (and N.K. Vidyadhar,
- 8 A Short Practice of Ophthalmology—By Drs. K. Krishna
- 9 Pasa Jala Nidhi-5 Volumes—By Kaviraj Bhudev Mukarjes, M.A.
- 10 The Principle of Thri Dosha—By Kaviraj D.N. Ray M. Sc.
- 11 Thri Dosha Siddhaanta—By Dr. A Lakshmi pathi B.A., M.B., C.M.
- 12 Abhyangam ..
- 13 Massage ..
- 14 Searets of Long Life. ..
- 15 National Health. ..
- 16 Comparative study of Marmas—By Dr. P. V. Krishna Rao, B. A. M., B. B., S.
- 17 An interpretation of the Ancient Hindu Medicine—By Chakra varti,

Journals and Magazines :

Andhra Medical Journal, Madras,

The Journal of Aayurveda, Calcutta.
Indian Medical Record, Calcutta,

Puranas : *

Mataya Purana, Garuda Purana, Agni Purana, Vaayu Purana Soura Purana, Skaanda Purena, Nandi Purana, Bhaagavat Purana.

Books in Sanskrit. +**Veda and Vedanga Grandhah :**

1. Atharva Veda Samhitaa (Sabhaashyaa) 2. Rigveda Samhitaa Do. 3. Saama Veda Samhitaa 4. Sukla Yajurveda Samhitaa 5. Atharva Vedeeya Kausika Sootram, 6. Charana Vyooha (Sabhaashyaa) 7. Satapadha Bhraahmanam 8. Sree Sooktam (Jeevaram Kaali Daasa Teekaa). 9. Niruktam (Durgacharya), 10. Vedamme roga Janchtu Saasthra, 11. Vedokta Prajanana Sastra, 12. Vedica Chikitscha Sastra, 13. Soma plant (B. L. Mukharjee)

Upanishad Grandhah :

1. Asta Vimsatyupanishad, 2. Chandogyapanishad (Sabhaashyam), 3. Bruhadaranyakopanishad (Sabashyam)

Dharma Sastra Grandhah :

1. Ashtadasa Smruti, 2. Yagnavalkya Smruti (Mitakshara)
3. .. (Apararka)

Vedanta. Grandhah :

1. Pancha Dasi (Sateeka), 2. Pancheekaranam (Sateekam)
3. Brahma Sootram (Bhashya), 4. Bhagavadgeeta Bhashya
5. Geeta Rahasya (Tilak's)

* These can be had from the Sacred Books of the Hindus Series and also from The Sacred Books of the East Series.

+ This list was prepared by Sri Kaviraj Jyotishchandra Saraswati Madan Mohan Lal Aayurveda Aushadah Peeth, Connaught Road, Delhi.

Nyaya · Viseshika Grandhah:

1. Karika vali (Sateeka), 2. Tarka Sangraha (Sateeka)
3. Nyaya Darshanam (Sabhashya Vrittukam 4. Prasasta Pada Bhashya Teeka Sangraha (Siromani Teeka) 5. Vaisesika Darshanam—Upaskara

Sankhya Yoga Grandhah:

1. Patanjali Darshanam (Bhashya Teeka Vrutti Sahitam),
2. Yoga Vartikam, 3. Shat Chakra Niroopanam (Sateeka),
4. Sankhya Tatva kowmudee (Sateeka), 5. Sankhya Darshanam (Sabhashyam).

Memasma Grandhah:

1. Meemamsa Darshanam (Sabhashyam)

Vyakarana Grandhah:

1. Siddanta kaumudee Sateeka, 2. Karita Vrutti 3. Maha Bhashyam—Sateekam.

Kosa Grandhah:

1. Sabda Kalpa Durmuka 2 Parts, 2. Anekardha Sangraha
3. Amarakosha (Bhaujee) 4. Amarakosha Ksheeri Swami.
5. Trikanu kosah sateekah, 6. Nanardha Sangraha—Ajayah.
7. Mohinee Kosah, 8. Brihat Brahma, 9. Brahma Vaivanta Puranam, 10. Srimad Bhagavatam, 11. Kooma Puranam 12. Vacdaspatyam, 13. Viswa Prakajasah, 14. Vajjayantee, 15. Vaidya Sabdha Kalpadrumum, 16. Kaviraj, N. N. Sen 17. Abyhtanga Hridaya Kosam,

Sahityagrandah:

1. Natya Sastram :- 2. Vagbhatalankara - Sateeka Udaya Veeru 3. Sangeeta Ratnakaram.

Rati Sastra Grandah:

1. Rati Sootram, Sateekam, 2. Ananga Ranga, 3. Kandarpu Choddamane, 4. Kamarsootya by Vajpyani,

Puranadi Grandhah :

1. Valmeeki Ramayanam, 2. Maha Bharatam-Sateekam, 3. Agni Puranam, 4. Soura Puranam, 5. Sota Samhita, 6. Brahma Puranam, 7. Vayu Puranam, 8. Ganesa Geta, 9. Matshya Puranam, 10. Garuda Puranam, 11. Narada Puranam, 12. Brahmanda Puranam, 13. Catalogue, Dictionry, (S. to E. Sir Monir) Bhavishyat Puranam, 14. Markandeya Puranam, 15. Linga Puranam, 16. Vamana Puranam, 17. Varaha Puranam, 18. Vishnu Puranam, 19. Siva Puranam, 20. Kalki Puranam, 21. Devesh Bhagavatam.

Mantra Tantra Grandhah :

1. Ahirbudhna Samhita, 2. Prana Toshinee Tantram, 3. Maha Nirwana Tantram, 4. Matuka bheda Tantram, 5. Vandhya Tantram, 6. Sarada Tilakam-Sateekam, 7. Shit Chakra Niroopanam

Neeti Silpadi Grandhah :

1. Kautilyardha Sastram, 2. Barhaspatyardha Sastram, 3. Kasyapa silpam, 4. Mana sara Vastu Vidya.

Aayurveda Charitnatha Grandhah :

1. Introduction to Pratyaksha Sareram By Gananath Sen, 2. Kasayepasamhita Upodhgatam by Pandit Hemaraj Sarma, Kasyapa Samhita, 1, Upodghata. By, Sri Pandit Hemaraj Sarma, 2. Bharateya Vaidyaka Charitram, by Dr. A. Lakshminipathi, B. A. M. B. & C. M. Bhishagratna, Mount Road Madras, 3. Preface Pratyaksha, sareram, By sri Gananatha sen,

Ayurveda Grandah :

1. Agada Tantra praakasa, 2. Ajirna Mangsri, 3. Anjan Nidanaa, 4. Anupana Darpana, 5. Nighantu - 1st part, 6. Arka Prakasa, 7. Asa Vaidyaka Nakal, 8. Ashtanga sarceram-P, 9.

Variar 9 Ashtanga samgrahah-satika, 10 Astanga Hrudayam-Aruna Hemadri 11 Aayurveda Chintamani, 12 Ayurveda Darsanam, 13 Ayurveda Prakasah-Madhav, 14 Rasa-Jalanidhi-Bhoodeva 5 Parts 15 Rasa Yoga Sagara, 16 Rasa Ratnakara, 17 Rasa Hridaya Tantram 18 Rasa Raja Sundara, 19 Rasa Tarangini 20 Rasa Ratna Samuchaya-Satika, 21 Rasa Kaumudi 22 Rasa Vaiseshika Sootram, 23 Rasa Manjari, 24 Rasa Chintamani, 25 Rasa Prakasa Sudhakara, 26 Rasa Paddhati, 27 Rasa Kamadhenu, 28 Rasa dhyayah, 29 Rasayana Tantram, 30 Rasendra Chintamani, 31 Rasendra Chudamani, 32 Rasendra Purana, 33 Rasendra Sara Sangrah, 34 Rasendra Bhaskara, 35 Rasopanishad, 36 Rosoddhara Tantram, 37 Raja Martanda, 38 Raja Nighantu, 39 Dhanvantari Nighantu, 40 Raja Vallabha Nighantu, 41 Roga Vinischaya-Yamini, 42 Lakshmi Moda Tarangini, 43 Basava Rajeyam, 44 Visha Tantram-Yamini, 45 Vira Singhava lokanam, 46 Brinda Madhava, 47 Vrinda Vaidyaka, 48 Vaidya Chandrodaya, 49 Vaidyaka Paribhasha Pradeepa-Satika, 50 Vaidya Paribhasha-Gangadhar, 51 Vaidyaka Sabda sindhu 52 Vaidya Jivana, 53 Vaidya vinoda samhita, 54 Vaidya vallabha, 55 Vaidya sarvaswa, 56 Vaidyaka sara, 57 Vaidyaka Chikista sara, 58 Vaidya Kaustubha, 59 Varana Bandhana-Sival Roy, 60 Salya Tantra Samuchaya-Vamdeva 61 Sarangadhara samhita - Adhamalla, 62 Salakya Tantram-Yamini's, 63 samgna Panchaka vimarsa, 64 siddha Bhesaja Manjoosha, 65 siddha Bhesaja Manimala 66 sidhanta Nidana, 67 susruta samhita—Dallihana-Gayadas, 68 Do Ghanker, 69 Do Harana Chandra, 70 svalpa Vritta samuchaya, 71 Hansarai Nidana, 72 Haramekhala, 73 Haridharita Grantharatnam, 74 Hastyayur-veda, 75 Harita samhita 76 Hridaya Priyah, 77 Paryaya Muktaivali, 78 Bhedyavinoda-Lahore, 79 susruta samhita, 80 Aayurveda sushena samhita, 81 Aayurveda sotram-Samprasada, 82 Do Yoganand, 83 Khanija vignanam, 84 Navanitakam 85 Arogya Digdarsanam Gandhi, 86 Aahara sastra—sukla,

- 87 Brihat Ilajulgurva. 88 Upavana vinoda-G. P. Mazumdar,
 89 Kalpa. Panchaka Prayoga, 90 Kakachandesar, Tantram,
 91 Kasyapa samhita-Agadatantram. 92 Kumara Tantram-Yamini,
 93 Do Ravana. 94 Koota Mudgara 95 Kshema Kutoohala, 96
 Gada Nighraha. 97 Chakradatta. 98 Gauri Nanchalika Tantram,
 99 Gada Vinischaya 100 Charaka samhitasgejiata Charkrakpani
 101 Do Gangadhar 102 Co, Upaskar, 103 Do sarasvati, 104
 Chikitsa Kalika-satika. 105 Chikitsa sara sangraha-vangasena
 106 Jvara Timira Bhaskar-Chanda. 107 sanjivani vignana,
 Ghaulikar 108 Tantra yukti vichaar Nilamegha, 109 Tibbea
 Akbari, 110 Trisati-sarangdhara, 111 Do Vaidya 112 Tridosha,
 113 Dravya Guna-Chakra satika, 114 Nyaya vaidyaka-Afrideva,
 115 Nadi Prakasa Ravana, 116 Nadi vignanam-Kanada, 117 Do
 Maddgalya, 118 Nidana Dipika-venkatesh, 119 Netra Chikitsa-
 Dr. Munje, 120 Pathyapathya vinischaya, 121 Do. viveka-
 Kaiyadeva, 122 Paka vignana-Nala, 123 Paradayoga sastram,
 124 Parada samhita, 125 Prasoti Tantram-Yamini's. 126 Pratyaksha
 sareram, 127 Plague Chikitsa, 128 Phirangadarsa, 129 Bala
 Tantram-Kalyan Malla, 130 Vopa Deva satakam, 131 saligrama

CHAPTER VI

(Vrikshaayurveda.)

[Contents.—Introduction-I[1] EXTRACTS FROM THE TEXT OF VRIKSHAAYURVEDA—Senses in Plants—Advantages of Growing Trees—Importance of Tree Planting—Classification of Lands suitable for Tree Planting—Classification of Plants—Seed—Green Manure—Special Preparation of the Seed—Bed Pits for Planting Trees—Best time for Growing Seeds—Time for Watering Plants—Artificial Liquid Manure—Making Jásmin to flower at all seasons—Artificially Increasing Scent of Flowers—Feats of magic with Plant—Life—Cross Grafting—Recipes for producing Red and Indigo Coloured Cotton—To Produce Untimely Fruit and Flower—To produce Seedless Fruit—Váta. Pitta and Kapha Constitutions—Váta Constitutions—Pitta

*The following Extracts are taken from the valuable article contributed by Sri. Girija Prasanna Muzumdar, M. Sc, Griffith Memorial Prize winner, Professor of Botany, Presidency College, Calcutta, and Lecturer Calcutta University, to the Cultural Heritage of India—Vol. III, and from the original Text of Vrikshayurveda published by Sri Vavilla Ramaswamy Sastry and Sons, in Telugu and the Manuscript copy of Vrikshayurveda obtained from the Podlian Library, London, kindly lent to us by Sree Raiah Saheb of Jayantipuram, Kistna District. Vrikshayurveda, which forms a part of History of Aayurveda is treated as separate chapter owing to its importance and its extensive nature Pasu Aayurveda which also accepts the same. Thridosha Siddhanta is altogether omitted in this Treatise. We request those interested to make a special study of it in Text Books which are now available in Sanskrit and other Indian languages. A. L.

Constitution-Kapha Constitution-Diagnosis of Diseases-General Principles of Treatment of Plants-Disinfection-Recipe for Treatment of Burns-Treatment for a Wind Fallen Tree-Treatment for Old Age-Sappletting like Blood letting-Symptoms of Indigestion-Wasting diseases in Plants-Cooling and Heating Treatment for Plants-Extracts from other Texts-Aarámálankaranam-Sirányeshanam-Silábhedanam-Jalarasa Jñanam-Durjalasya surasa sugandhé karanam-Tatákádénám rakshanam-Annádi vritti.— [II] STUDY OF BOTANY FROM THE VEDIC PERIOD DOWN TO THE GUPTA PERIOD (C. 600 A. D.)— I. Morphology (Aakriti gnána.,—Múla- 1 Tula or Vistara- Parna- Pushpa- Phala Béja- 2. Internal Morphology or Gross Anatomy (Antarnirmána)— 3. Physiology (Vyápára)—Circulation of Sap- Exudation of Sap (Rasasruti)- Growth-Movements-Consciousness-Reproduction and Sexuality-Rotation of crops. 4. Ecology. 5. Taxonomy)- Nomenclature - Classification - Botanical - Medicinal-Dietetic. 6. Plants and Evolution. 7. Heredity 8. Plant Pathology. 9. Botanical Marvels. 10. Botany and Allied Sciences. [III] Madhya Yuga-(From 600 A. D. to 1563 A. D.), [IV] Modern Botany. 1. The First Period (1563-1848 A. D.) 2. The Second Period (1848-1935). Economic Botany-Palaeobotany-In lian Universities-Bibliography.]

(Introduction)

The science of *Vrikshayurveda* or the study of plant life as such, attracted considerable attention of our forefathers for a good many reasons. First of all, plants were intimately connected with trade and commerce in which Hindustan, even in the Mohenjo-daro period, excelled, having commercial intercourse with Western Asia, Eastern Africa and many of the countries of modern Europe as well as with the East. The archaeological and other finds show that the distant Hungary

as well as the distant Eastern Islands were commercially connected with this land of ours. Most of the commodities used in that extensive trade were plant products, and the vessels in which these used to be transported were made of wood. This made a scientific study of plants and plant life a necessity, and Vriksháyurveda came to be cultivated along with other sciences by the ancient Hindus.)

We have sufficient evidence to show that the science of Medicine, Agriculture, Arbori Horticulture and Sylviculture were greatly developed in Hindustan and the science of *Vikshayurveda* on which all these sciences are based, must have undergone a corresponding process of development. From the *Arthasastra* and similar treatises we learn that every good Government used to provide the citizens under it with public parks, pleasure gardens, hunting forests, etc, for enjoyment, recreation and sports—all placed under the supervision of experts. The consecration of gardens, a Vedic ceremony, and the dedication of such gardens to gods and to ascetic fraternities were a prevalent practise even during the Buddhist period: Laying out a garden is considered as one of the Sapta Santanas. (seven children). Maintenance of these gardens required a scientific knowledge of plants, and they were placed under superintendents (*aramadhi pathis*).

This science was called *Vrikshayurveda* or, it was, in the alternative known as the *Bheshajavidya*, as the major portion of the medical drugs came from plants. Both these terms occur in ancient Sanskrit Text, the *Agni Purana*, *Brihai Samhita* etc. In *Arthasastra* we get the term *Gulmavrikshayurveda* and in the *Dhanvantari Nigantu*, the *Bheshajavidya*. *Vrikshayurveda* literally means "knowledge of tree life". The modern Science of Botany, if it also includes the treatment of diseases of plants, would convey the full signifi-

cance of the word *Vrikshayurveda*. The *Gulmavrikshayurvedajna*, or the applied botanist, according to the *Arthashastra*, *Agni Purana*, *Brihat Samhita* and other Sanskrit Texts, was to learn the art of collection and selection of seeds, selection of soil, sowing, the successful germination of seeds, the various means of propagation such as grafting and cutting, planting, nursing, manuring, rotation of crops, cultivation under favourable meteorological conditions, treatment of plants in health and disease, classification and identification of plants, location of plants for improving the aesthetic and hygienic surroundings of the home stead, and so on. As an illustration, we may cite the test to which *Bhikshu Atreya* the celebrated teacher of medicine at the University of Takshasila, put his equally celebrated pupil Jeevaka afterwards the physician of Bimbisara. He was, in the course of the examination, asked to collect, describe, identify and mention the properties of plants that were to be found within four *yojanas* of the University town, and this Jeevaka did to the entire satisfaction of his teacher (Preface to Viraja Ch. Sen Gupta's *Vanaushadhi-darpana* Vol. I).

Unfortunately for us, neither the *Vrikshayurveda* nor the *Bheshajavidya* is extant now. But we still have some material in the form of scattered references throughout the Sanskrit and Pāli literature, out of which it is possible to build up, though in a very incomplete form, the botanical science, which will at least give an estimate of our forefathers' contribution towards the advancement of botany in that remote age.

(I)

(*Extracts from the Texts of Vrikshayurveda.*)

Translations of Extracts from *Vrikshayurveda*, Telugu Edition, are given below. The complete book is printed in Telugu along with our notes and commentaries.

(Senses in Plants.)

The Mahábharata, in Sántiparva in the dialogue between Bhrigu, and Bharadwája says: " Just like men who are constituted of a Páñchabhautika body, who possess internal and external sense organs and who enjoy happiness and unhappiness so also plants are endowed by nature with sense organs and enjoy happiness and misery.

The following denotes the number of verse in Váyilla's Telugu Edition.

V-1. In the hardest wood, there is Aakasa-Ether, because even these trees yield fruit and flower.

V-2. We find that, by the application of heat, the bark of plants, their fruit and flower fade away and even drop down dead. Therefore, it is evident that they have the sense of touch.

V-3. Fruit and flower deteriorate (viseeryate) by (strong) winds, fire, thunder and lightning. So, they have the sense of hearing.

V-4. Cartin diseased plants are cured of their diseases by the administration of manures, pouring medicated water and by fumigations and they begin to yield flower again as a result of such treatment. So, they have the sense of smell.

V-5. We see that plants suck water by the roots (as by mouth) and they get diseases by unfavourable conditions of water supply and when suitable treatment is applied, the disease is cured. So, they have the sense of taste.

V-6. Plants know and appreciate the states of happiness and misery and when they are cut, they grow again and therefore, they have life. If they have no life, they would not grow again.

V-7. It is because they have life, they are able to assimilate water, light and air that is taken by them. They have

therefore the power of digesting food and fattening themselves by food.

Advantage of Growing Trees.

V-8. It is better to grow a tree that yields shade for a traveller on the road side, then to have many sons who are devoid of Dharma and Artha.

V-9. Encouragement of plant growth is highly praised thus. Growing a tree is equal to growing 10 children, digging 100 tanks, 1000 step wells and 10000 draw-wells.

V-10 and 11. The growing of the plant, Tulasi (Basil) and Bilva (Aegil Mamrilos) in particular are highly praised.

Selection and Location of Trees.

V-12. 1 Aswaddha (Ficus Relisiosa), 1 Banyan, 10 Tamarind, 3 Each of Wood-apple, Bilva and Gooseberry (Aamalaki) and 5 trees of Mango is considered a good selection for a small garden.

V-13. It is auspicious to grow a Banyan (Ficus Benga-lensis) in the East of living house. Medi (Ficus Glomerata) in the South. Aswaddha (Ficus Religiosa) in the West. Plāksha (Ficus Tjakelo) in the Northern side of the house.

V. 16. It is generally recommended to lay out pleasure gardens in the West, North and East of living houses but not in the South. This is conducive to prosperity and growth of population.

V. 17. Whatever be the tree, its shade should not fall on the house. Even if it be a tree yielding gold do not plant it at the entrance of the house.

*"Sarvesham Vriksha Jatinam, Ohayavarja Grihe sada,
Api Souvarnikam vriksham Grihadware na ropayet."*

Vrikshaayurveda] Selection and Location of Trees. 367

V-18 to 23 and 26. The following trees are considered auspicious or inauspicious according as they are grown in house gardens, pleasure gardens, or fields or forests respectively.

Auspicious.

House Garden (Grihārāma)	Pleasure Garden (Udyānavana)	Field..	Remarks.
Tulasi, Neem, Asoka-Punnaga Sireesha, Priyālu (Chārapappu, V. 29-20.)	Phalini, Asoka- Punnāga, Sirisha Champaka.	Kshiri ? Kadali (Plantain) Draksha Priyalu Panasa (V. 29-30)	

Inauspicious.

House Garden- (Griharama)	Pleasure Garden (Udyanavana)	Remarks.
Badari (Plum) Plantain Dadima, Madiphala, Palasa. Kanchanara- Sleshmataka. Arjuna. Neeli, Haridra Sarshapa-Mulumoduga (Kimsuka) Girikarnika Sita, Tintrini, (Tamarind) Kokilaksha, Kovidara. Karanja.	Bhallataka Plaksha Kovidara Ankola Hingu Slemshataka Viohitaki.	Probably on account of some having thorns and others har- bouring mosquitoes, worms, snakes, poi- sonous juices. and gases and some on account of their frightful appearance. Even if they grow of themselves they should be removed.

V-25-26. Flowers and fruit are intended for our enjoyment. Those trees which yield neither flowers nor fruit should not be grown in houses and pleasure gardens. They are not

auspicious. It would appear from this that the fashion of growing colourful crotons in gardens attached to houses was not appreciated as in these days.

Importance of Tree-Planting.

V. 31-32. 66-69. The chief purposes of scientific gardening are for beauty (Monoharata) and utility. (Sampath). Both these will be frustrated if gardening is not conducted in a scientific manner. Here is a procedure for a ceremony of tree planting in which the king or the master plants the first few plants on an auspicious and suitable day with great pomp and festivity. This reminds us of propaganda conducted in the days of the Congress Ministries for observing a tree planting week in which all the officers of the State were asked to take a leading part.

V. 35. A devotee who grows a tree with all possible care will attain the same bliss as one who feeds learned men (Brahmins), who performs his sacred Dharma, who performs devoted service to his parents, and who worships gods with extreme devotion.

Classification of Lands Suitable for Tree Planting.

V. 36-38. Beautiful gardens can only be laid in localities where there is plentiful supply of water (Jala Pranta). Lands having poisonous stones, molehills (Valmika), cave-like excavations (Bila), saline soils; bad water, and stones are unsuitable for laying out gardens. Lands having black soil, with supply of water near at hand, with green grass growing on the surface, are suited for gardening.

V. 40. Soils are classified as Jaangala (dry), Aanoopa (wet) and Saadhaarana (middle class).

V. 44. Saadhaarana (middle class) soil, which is neither

too dry nor too wet is best for laying out gardens. The following table shows plants suitable to each class of soils:-

Anúpa Soils (Wet).	Jāngala Soils (Dry).	Sádháraṇa Soils (Middle Class).
Panasa	Sigru (Drumstick)	Mádiphala
Orange	Bilva	Punnága
Tála (Palmyra)	Saptaparni	Champaka
Vamsa (Bamboo)	Sokálíka (Tándra)	Aamráta (mango)
Jambira (Lemon)	Asoka	Muktaka
Jambu	Sami	Priyangu
Tilaka	Karéra (Oliandar)	Dádima and
Ghata	Badari (Plums)	others.
Kadamba	Rákecha (Prickly-pear)	
Aamráta (Mango)	Nimba (Neem)	
Kharjúra (Date)	Soka and others.	
Peoga (Aricanut)		
Kadali (Plantain)		
Tinisa, Dráksha,		
Ketaki, Nárikela,		
bbali		
Audumbara		
Arjuna, Mádiphala		
Dádima, Ankola etc.		

Classification of Plants.

V-45 to 51. Plants are classified into 4 classes.. 1. Vanaspati, 2. Druma, 3. Lata, and 4 Gulma. Their germination is of 3 kinds. 1. from seeds, 2. from stems (kánda), and 3 from bulbs (kanda). The following table illustrates this classification.

Growing from seeds (Beeja).	Growing from stems (Kanda).	Growing from kanda (bulbs).	Growing from stems (kanda) and seeds.	Growing from bulbs (kanda) and beeja (seeds).
1	2	3	4	5
Jambu Champaka Punnaga Nagg Kesara Tintrini (Tamarind) Kapiddha Badari Bilva Kumbakari Priyangu Panasa Madhuka Aamra (Mango) Karimarda (Karivepa) and many other trees generally grow from seeds.	Tambooli (betal leaf) Nirgundi Tagara Bimbi Sampenga and others.	Kunkuma Aadraka Rasona Aalu Mulaka and others.	Patala Dadima Plaksha Karayera Mallika Kata Udumbara Kunda (Molla) Gangaravi Vata Aamra and others,	Ela Padma Utpala and others.

Green Manure.

V. 52-53 Ploughing the land thoroughly, sowing a green

manure crop and ploughing the land again so as to bury the green crop when it is with its flowers and fruit are recommended before laying out the garden.

Special Preparation of the Seed.

V. 55-56 The seed will germinate quickly if it is soaked in milk and dried and fumigated with the mixture of the seeds of Bruhati. Taila seeds and ghee or if the seeds soaked in milk are mixed with cow dung and fumigated with Vacha, Vacha is said to be a well known germicide for fungoid growths. It is also recommended to rub the seeds with Vidanga and honey.

V. 57-64. Milk, ghee, cow-dung, Vidanga, Cascus (Useera), Tila seeds, honey, Ikshura seeds, Bruhati seeds, ashes of the whole plant of Bruhati are recommended as useful for special treatment of seeds before they are planted.

Irradiation in direct sun light for 5 days after soaking the seed in milk has been specially recommended V. 61.

"Vidanga maakshika lipta

Beeja Maasuprarohayet,

Go Sakrin mardite chappi

Sushkam, beejani praja yate.

Seed Bed

V. 65. After the seeds are sown in a seed bed, the bed should be covered with straw and watered with a mixture of milk and water till the seeds germinate. After the germination of the seeds, the straw should be removed and the bed should be exposed to direct sun-light,

Pits for Planting Trees.

V-70. The pits for planting trees shall be 4 ft. deep and 4 ft. also in length and breadth. Sand should be removed

from the pits which should then be filled with soft earth. The roots of the plants should be dipped in water before planting.

V-71 and 72. The best distance between each plant shall be 30 ft. 24 ft. is moderate and 18 ft. is the minimum. The more the distance, the greater will be the advantage because the plants will then have sufficient space to expand their branches to yield a better crop of fruits.

V. 77. Every effort should be made to protect trees from frost, excessive winds, smoke and heat of fire.

V. 78. The destruction from frost may be alleviated by dusting the plants with ashes of trees particularly destroyed by lightning.

Best Time for Growing Seeds.

V. 80, 81. The months of Aashadha and Sravana-July and August, the season of early rains is the best for growing seeds and planting trees. Some say that unless the plants are too tender, they may however be planted in any season except Greeshma-hot summer season. Trees without stems may be planted in March, April and February. Trees with big branches may be planted in Sravana and Bhadrapada. (September and October)

Time for Watering Plants.

V. 82-83-84. In summer, it is best to water the plants twice daily at sunrise and sunset. In the rainy season, plants should not be watered unless the soil is very dry and that only once a day. In other seasons, they should be watered according to the needs and the water should always be pure (Nirmala). When trees are planted newly, they should be watered both morning and evening.

Artificial Liquid Manure

(Kunapa Jalam)

V. 84. 88. The flesh of deer, insects, fish, sheep, goats, rhinoceros or any animal that can be got should be secured as much as possible. Select such portions of the flesh as have plenty of marrow, fat and lard, mix up the whole mass, put it in a pot and boil well with water and mix into it the powder of Tila seeds and new black gram. Then add milk and honey and some quantity of hot water. Then, place the whole thing in the sun or in a hot place fortnight. One need not be very particular about the things or the quantities to be mixed in this manure mixture. It is enough that such things as of the nature of those mentioned are added according to their availability. The liquid manure thus prepared is called *Kunapa-Jalam*: It makes the plants grow plump.

Amongst special manures suitable for individual crops mention is made of feeding the plants with water ground with chandana for Jasmin group. (V. 117), of feeding the plant with toddy every evening for Karantaka (gorinta) etc., (V-118) and with water mixed with dung of goat, sheep or cow for flowering and fruit yielding trees (V-119). An external application of a mixture of Vidanga, Rice, Fish ground with cow's dung and cow's urine to the roots of plants generally accompanied by free watering for 7 days will yield fruit and flower in abundance. (V. 120—121). Another liquid manure is made by boiling with water, Barley, Green gram, Tila seeds, Black gram, and Horse gram (V.122). Meat water is recommended for Date, Coconut, Bambo, and Paddy (V 123) and decoction of Black Gram, Green gram, (V-125) and the seeds of Maruva cooled, to which are added some salt and toddy is best for coconut.

V. 137. A mixture of common Salt, Bone meal, Paddy

husk, and Sand is to be buried around the roots of Coconut trees.

V. 128-129. If a Panasa tree is wrapped in the leaves of Arica nut plant, it improves its fruit bearing. For Mango, the flesh of jackal, godha; deer, and pig, rat, and horse boiled in milk along with the tender leaves of Pancha pallavas (i.e.), Aswatha, Vata, Plaksha, Mango and Udumbara, is recommended as an artificial liquid manure.

V. 131-132. For Dadima plant, water in which goat's flesh is washed along with a fumigation of smoke obtained by burning together goats flesh and goat's hair is specially recommended. So also, an external application at the root of a paste made by grinding with ghee and honey, Goat's flesh, and Triphala is recommended along with the above fumigation. A decoction of Fish along with horse gram (kulutha) is also recommended as a liquid manure for Dadima.

V. 133-135. For the lemon group the flesh of jackal mixed with jaggery, milk and oil cake are also specially useful.

V. 151-152. Ghee, Kunapa liquor, pigs' manure, horse gram, Triphala, Fish gauno are all recommended for manuring external application and for fumigation.

V. 138. Night soil (Human faecal matter) is to be applied for Aricanut trees in the rainy season.

V. 141. The roots of plantain trees are to be punctured by iron probes burnt in ivory tusks or in the fire made by burning pig or horse dung. Old cattle yard manure, mixed with paddy husk and ashes, together with good watering is best for plantain tree.

For Badari or plum, water in which Liquorice and honey are soaked is best. Liquorice and Tila seeds ground in equal parts and mixed with honey and water yield big, sweet and scented plums.

V. 145. Oil cake, pippali, gunja, syama; white mustard, aconite, vacha, all these are powdered together and mixed with milk and applied as a manure for cham-paka-

V. 155-158. So also the flesh of jackal and fish. Similarly special manures are recommended for Panasa, Bilva, Madhuka, Badari, Madiphala, Prenkhana, kadamba, and Nagakesara, and other trees.

V. 159. The author recommends that a plant or creeper should be made to be stung by a scorpion, and then fumigated with ghee and manured with the fat of rats and pigs. They are said to yield plenty of fruits by such stimulation.

Jasmin to flower at odd seasons:

V. 146. Spread some straw among the Jasmin bushes and burn it carefully so that the bushes and the land may be artificially heated. Now water the plants regularly. The plants in the plot so treated will shed their leaves and throw off new shoots soon and begin to flower after a definite period of 3 or 4 weeks. By selecting one plot of land after another for treatment in the same manner we may stimulate the jasmin plants to flower almost at any season that we may require.

Artificially Increasing Scent of Flowers.

. 160. Water, in which kushta, patraka, sura (Alcohol), musta, tagara, and useera are soaked is used for watering the flowering plants. The resulting flowers will be very nicely scented.

Feats of Magic with Plant Life.

V. 166. The seeds of Utpala are soaked in Ankola oil and then put in water. They will spontaneously and surprisingly grow into creepers. This has to be tried.

V. 170. Kumuda root is soaked in buffalo dung and urine seven times and then planted. It quickly turns into a creeper.

A. 177. Any plant will change the colour of the flower when continuously watered by water of a designed colour.

V. 183. A raw lotus bulb is painted underneath with any colour of choice and then covered with honey and ghee. The flowers resulting from the lotus arising out of the bulb will bear the colour painted. This, the author says, is wonderful. Here are some other methods of working magical feats.

Cross Grafting.

V. 176. A stem of a Jasmin plant is passed through a hole bored in the root of a Parijata plant and the junction is well covered with soft earth and carefully watered. When the two are joined together, the bottom jasmin stem is severed from the top jasmin stem. The flowers that come out of the grafted jasmin creeper will not only be red but will also possess a fine fragrance. This should be tried.

Recipe for producing Red and Indigo coloured Cotton.

V. 185. Yava (Barley seeds), Tila seeds and Turmeric leaves are buried at the root of the cotton plant and watered regularly. The cotton plant will yield red cotton.

V. 187. A paste made by rubbing together Salmali, Turmeric, Indigo, Hareetaki, Vibheetaki, Aamalaki, Kushtam, and alcohol is to be applied to the cotton plant as an ointment. The cotton which it yields will be of the colour of a parrot.

V. 188. A mixed manure made by mixing together Mangista, Tila seeds, Barley seeds, Tamarind seeds, Jeevanti

leaves and Manissila (Realgar) is applied to the cotton plant, it is watered with milk of cow, sheep or goat regularly. The cotton produced from that tree will acquire blue colour.

It is highly praiseworthy that such experiments on plant life were even attempted thousands of years ago.

To produce untimely Fruit and Flower

V. 188-189. Pour boiled and cooled sugarcane juice near the roots and cover with earth. Feed the plant with fresh sugarcane juice or supply a mixed manure made of Tila seeds, Khali water in which raw rice is washed of a tree Vidanga and cow dung and feed the plant with sugar cane water. The plant will flower out of season and yield fruit.

To Produce Seedless Fruit.

Madhuyasthi Tila Kushita Madhupushpa Vinirmitam

Modakai schadite moole Nirastisyath Phalam Turah.

V. 190. Make balls by grinding together honey, Yasti-madhu, Tila seeds, Koshtam, Madhuka flower, and bury the balls near the roots.

V. 191-200, Here there are other Recipes, for producing sweet and seedless fruits, big fruits, untimely fruits, and for keeping the fruits long on the tree.

Vata, Pitta Kapha constitution.

Vaata, Pitta and Kapha constitutions in Plants are known by the following symptoms.

V. 91. To grow slender, tall and light, to be rough, to be sleepless, inability to endure any hardship and to fade by slight heat of the sun, these are the symptoms by which Vaata constitution or temperament of a plant is known.

Krisodeergho Laghoo Booksho
Nidraaheeno Alpaivedanah
Sadhatte phala pushpaani,
Vaatah Prakritika taruh

V-92. Ability to withstand sunlight, paller, having branches breaking away frequently, and yielding fruit which ripen untimely are the symptoms by which plants with pitta constitution are identified.

Aatapaah sahanah faanduh
Saa'haheeno muhuryadi
Akaalaphaala Paakas syaat
Chitakee pitlaatmaako smritah.

V-93. A tree that has stout stems and plenty of leaves, that has abundant flowers and fruit, and that which is full of creepers, that which has a moist soil allround is considered to have a kapha constitution.

Snigdha Saakhaa Dala Ssaakhi'
Samyak pushpa phalojvalah,
Lataa palita gaatrastu
Kaphavaan parimandalah.

Diagnosis of Diseases.

V-89. Just as in human beings, disease is caused in plants by derangement of Vaata, Pitta and kapha and so also plants are affected by diseases of Vaata, Pitta and Kapha types. The physician should find out the diagnosis the vitiated condition of the plant for the alleviation of the vitiated Dosha.

Naraanaaniva Vrukshaanaam,
Vaata Pitta Kaphaa Gadaah,
Sambhavanti Niroopyaadha,
Kuryaatta ddoosha Naa'samim.

V-90. In addition to the diseases caused by internal-causes which vitiate the Doshas, there are diseases caused by external causes such as infection by insects, microbes, and fungi etc, by it juries through fire, by fractures caused by heavy winds, by lightning, by direct injury and by instruments. These should be treated individually according to the respective condition.

Kita Jagdhe, agni sumplushie,

Vaata bhagne asanikshate,

Vrikshacchedopachaaraadi

Peeditecha Pridhak kriyaa.

General Principles of Treatment of Plants

V-94. Vaata derangement is increased by katu (pungent), tikta (bitter) and kashaaya (Astringent) Rasa or substances having these tastes.

Pitta is increased by katu (pungent), lavana (saltish) and Amla (sour) Rasas or substances possessing these tastes. It is also increased by heating substances or measures. Kapha is increased by oily substances and by sweet (madhura), Amla (Acid) and Lavana (saltish) Rasas or substances having these tastes.

Katu tikta kashaaya rasath pavanah,

Pittam katoshma lavanaamlaih

Snigdha madhuraamlam Lavanaih

Sleshmaakaa yaati Taroh.

Vaata diseases are alleviated by cily meat juices. Pitta diseases are alleviated by oily or greezy, sweet and cool water. Kapha diseases are cured by pungent, acid and warm water and by astringent and dry substances.

Snigdhairvai Pisitarasaih prayaati vaathah,
 Samsnigdhair madhura himair jalaischa pittam
 Katvamlair ahima jalaih kasháyá rookshaih,
 Slekshmapi kramavitaih prayati násam.

V-96. Even though no vitiation of the doshas is noticeable, there may sometimes be fading of the tender leaves, and loss of lustre in certain plants. It must then be diagnosed as an infection of the root of the plant by insects. It must be dug out and the infection should be removed. The part should then be fumigated with a paste made of cow's urine, ghee, vidanga, mustard, and til seeds or oilcake.

Disinfectant Recipe.

Karanja, Aaragvadha, Lasuna, Saptaparna bark, Musta, and Vidanga, should be ground with gomootra into paste and applied as a dressing to the infected part. It is krimiharam.

Treatment for Burns

A tree suffering from burns should be watered with a mixture of milk and kunapa liquor? (see page 312) at its root and the whole tree should be anointed with the juice of lotus bulb. The tree will soon burst in tender shoots, green like emerald. V. 98.

Treatment for a Wind-Fallen Tree.

Take the barks, of Plaksha Arka, and Udumbara, and grind them with ghee, alcohol and honey and milk. Apply the paste to the broken stem of the tree. Support it well and cover it with earth taken from around the roots of plaksha tree and fix the tree well in the ground and water the tree with milk and then with water. The tree will grow as usual.

Treatment for a Tree struck by Lightning.

Take musta, usira, madhooka, green gram, black gram, barley and til seeds and grind them into a liquid along with

milk and water. Keep constantly wetting the tree with the fluid. The tree will revive and grow normally.

Treatment for Old Age.

Water the plant which has become old and which ceases to flower and yield fruit on that account with the nutrient liquid manure (Kunapa jala) and milk, the plant will be rejuvenated.

Sap Letting Like Blood Letting.

V. 105. When there are symptoms of indigestion make a cut with an axe near the root of the plant and let out the cell sap so as to remove the vitiated lymph or juice. After sufficient juice flows out cover the wound with an ointment made by grinding together with honey, ghee vidanga and til seeds and then cover it with earth.

Symptoms of Indigestion

V. 104. In indigestion of a plant caused by excessive accumulation of fluid in the body, the symptoms are folding of the leaves as in sleep, smell of fish, falling of leaves, clustering of ants around the plant and peeling of the bark. If these symptoms are noticed, some sap should be let cut by an incision.

Wasting Diseases in Plants

When tissue wasting is noticed in a plant, water the plant with a mixture made of sugar and til seeds ground in cow's milk or water or treat it with suitable ointment and fumigations.

Cooling and Heating Treatment for Plants.

V. 108. When a plant is fading and is weak, feed the plant with milk and water, ground with sugar liquorice and

vidanga, the weak plant will be refreshed and bear flowers and fruits. If on the contrary when the root is anointed with a paste made of hingu (Asofeatida) or the plant is fed with the decoction of horse-gram, the flowers and fruit will fall off quickly. The former is a cooling and refreshing treatment and the latter is a heating and exhausting treatment. It is evident that the Theory of Tridosha was fully understood and the treatment of disease in plants was throughout conducted in accordance with those principles.

Extracts from Other Texts

(Aarama Alankaranam)

Decorative Alignment of Trees.

The alignment of trees should be so planned as to be round a park of any of following shapes—mandala (circular); nandyāvarta (open on three sides and closed on one side); swastika—(stellate intersecting at the centre); chaturasra (rectangular) or sarvatomukha (polygonal or octagonal).

Fruit and flowering trees should be planted in avenues around these parks or enclosures. Seats should also be constructed in suitable places, so that these seats are studded with fragrant flowers dropping from the trees. Cradles may also be made out of creepers and branches of adjustment trees for the enjoyment of lovers who visit the gardens. Here also are natural cave like houses made of natural bushes. Beautiful seats studded with precious stones are constructed here and there. Peacocks should be found dancing as if they are enjoying the beauty of the garden. There should also be ponds and wells having cool waters and beautiful lotuses attracting Bhramaras (Humming bees) with their musical sounds. It is impossible to give literal translation of the beautiful description of the lay out of the garden given in

this portion of the book. The reader must read the original in order to appreciate the high attainment of art and culture of those days.

Sirānveshana.

Sirānveshana deals with the means of ascertaining the presence of underground currents of water by the study of plant growth—See Telugu Text.

Silābhedanam.

Silābhedanam deals with the indications of the onset of rains and the quantity of rainfall at certain periods and of predicting the same by the study of plant life.

Jala Rasa Jnanam - Durjalasya Surasa

Sugandhee Karanam.

These subjects deal with the study of the properties of cell-sap and improvement of the taste and flavour of the same. These have to be studied in the original texts published in Telugu by us in Vrikshāyurveda, or from Brihat Samhita by Varāhamira in Sanskrit.

Tatakadeenam Rakshanam.

Construction of wells and tanks and their protection.
(See original Texts).

Annadi Vritti.

Study of Dictetics—See original Texts.

[II]

Study of Botany from the Vedic Period down to the Gupta Period. (c. 600 A. D.)

Here we have found it convenient to arrange the information collected from botanical and non-botanical works

in a more systematic order as in a modern Text-book, and we shall proceed in this order:—1. Morphology. 2. Anatomy. 3. Physiology. 4. Reproduction. 5. Ecology. 6. Taxonomy. 7. Evolution. 8. Heredity and 9. Botanical Marvels.

1 Morphology (*Aakritignana*) *Descriptive Botany.*

This is necessary for the proper identification of plants, particularly. when the number becomes unusually large. After the germination of the seed the plant grows and becomes adult. With the growth of the plant we find new members developed. In order, therefore, that the plant may be properly described, its members are named and characters noted; and we find this particular branch of the science in course of development.

Thus even in the Vedic texts we find that plants are classified as trees, shrubs, herbs, creepers, the spreading, the bushy, etc., (*Atharva-Veda*, VIII-7), and the common people knew the story of plant-life by the time of the *Brihadaranyaka Upanishad* where there is mention of *Oshadhis* and *Vanaspatis* which are compared to the hairs on the mountains which are compared to the body of the earth.

III. I. I. The universe is compared to a vast eternal pepal tree (*Aswaddha*) with roots above and branches spreading in all directions from above down wards (*Katha II. 6 I.*) But a regular enumeration of the parts of a plant we find in the *Taittiriya Samhita* (VII. 3-19-1) and *Vajasaneyi Samhita* (XXII. 28) where it is said. 'It (the plant) comprises mula (root) and tula (shoot); (the latter consists of) kanda (stem) vatsa (branch), pushpa (flower) and phala (fruit) while the vrikshas (tree) have in addition a skanda (trunk), sakha

(branches) and *parna* (leaves) (*Tait. Sam.* VII 30. 20. i; also Rig-Veda, 1-32-5; Atharva Veda, X 7-38). An instructive description of the importance of the various members of a plant is given by Sukráchárya by way of analogy :

'The king is the root of the state, the councillors are the stems or trunks, the commanders are the branches, the troops are the leaves and flowers, the subjects are the fruits and the land is the seed' (Sacred books of the Hindus, XVI, P. 189). A similar description is also to be found in the *Vishnu Purana* (VII, 37-39) where the plant is primarily divided into the *mula* or *pada* (the subterranean part and the *vistara* (the subærial part). We now briefly notice the terms used in describing the different parts of a plant :

Germination.

Germination:—In order to study the life history of a plant one must begin from the stage of seed in which the plant lives in the embryonic state. The awakening of the embryo under suitable conditions is known as germination. In Sanskrit it is called *ankura-abheda* : this is the most appropriate word for germination, as during the process the *ankura*, or the seedling, comes out by piercing the seedcoat, and this happens only under certain conditions, namely *ritu* (proper season, i. e., general warmth), *kshetra* (good soil), and *am.u* (water) (*Susruta, Sareerasthana*, II. 33).

We see that the three conditions of air, (Vata) warmth (Pitta) and water (Kapha) necessary for successful germination were already known to the people of Hindusthan long before the Christian era. The term *uttanapada* found mentioned in connection with germination is also significant, as during germination it is the *pada* or the root, that is seen to come out first.

Mula - Root.

This is the most significant term for root. Mula is the most important organ of the rooted plant. This fact is also noted in the *Sukraneti* (I. 767) where it is said, 'Just as the branches of a tree wither up (and tree dies) when its roots decay,' etc. The word *padupa* (drinker of *rasa* from the soil by roots) for plants at once shows that the real function of the root was a common knowledge. Adventitious roots are called *s'ukhi* *s'ipha* and fibrous roots *s'ipha* or *jata*: even the bulbous roots are distinguished in the *Arthashastra* (XXIV. Bk. II). Thus the terms used in the description of roots are quite adequate and suggestive of their functions and origin.

Tula or Vistara - Stem.

This comprises two parts, namely. *kanda* and *parva*. *kanda*, stem or axis, may be with *parva* (internode) and *granthi* or *parvasandhi* (node) from which the *parva* or leaf, springs. Plants may be *Sakanda* or *aparakanda* or *stamba*. Branchless stem or caudex is called *sthanu* or *s'anku*. Bushy plants are called *kshupa*, *Sakha*, *prati'sakha* and *anus'akha* are used in describing branches in descending orders. Underground stems are called *kanda*; they look like roots but are not roots and serve as a means of propagation; as examples are mentioned, *aluka* (potato), *lasuna* (garlic), etc., (*Kama-sutra*). The bud is called *pravala*.

Parna - Leaf.

Leaf is so called because it is green.* It is also called *patra* as it falls soon. It may be *savrinta* (petiolate) or *avrintaka* (sessile); it may be *ekapatra* (simple, unifoliate), or

* The English Word 'Fern' is derived from the Sanskrit Word Parna (See Websters Dictionary).

dvipatra, *tripatra*, *saptaparna*, and so on, according to the number of leaflets in a compound leaf. The shape of the leaf is also noticed, as appears from such terms as *a'v: r-naka* (like the ears of the horse as in *Shorea robusta*), *moosha-ka-parni* (like that of a mouse, as in *Salvinia*), *ke'sarni*, *hamisapadi* and so on.

Pushpa - Flower

Prasanna, *sumanas*. These are all very appropriate terms for flowers. The unopened flower buds are called *kalika*, *koraka*; opened flowerbuds *mukula* and *kutmala* and full-blown flowers *vikacha*, *sphuta*; a bunch of flowers if cymose, is called *stavaka*, *guchchhaka*, and if racemose, is called *manjare*. Particular types of inflorescence, are called *s'ri hastinii* (helicoid) *chhatraa* (umbel, etc., Flower stalks are called *prasava-bandhana*, that is, that which binds flowers and fruits to the mother plant. Floral members are called *puspachchhada* (sepals) *pushpadala* (petals), *kesara* (stamens), *paraaga*, *kesarar-enn* (pollens) the last two terms at once show that the pollens are dust-like and are carried far. It seems that the gynoecium has not yet been recognized, as no suitable term differentiating this organ from the male endroecium is found at this period. But certain trees are differentiated as male and female trees for example:—*Tala*—*Palmyra*.

Phala - Fruits.

It is the result of a previous process, This is a very scientific term, as fruits are produced as consequences of fertilization. Green fruits are called *salatu*; fleshy fruits, *jaalaka* *kshiraka*; dry ones *vaana* a legume, *s'imbi*. The fruits are classified individually, such as *aamra* (mango), *jambu* (fruit of Jambu), *ainnguda* (that of *Inngudii*) *vainava* (that of bamboo), and so on.

Beeja - Seed.

Here we get a more or less complete description. Beeja is the most scientific term for seed, for it is that in which the plant germinates, or takes its origin. Seed-coats are called Beijakosha, the kernel or endosperm, s'asya and the cotyledons, bijapatra or bijadala. A beautiful description of the life-history of mango trees is found in the *Saaringadhara Paddhati*.

Different kinds of plants are recognised. Thus the weak plant is called *lataa*, *vullii vraatii*. They are of two kinds—those that go to the top of a tree and those that spread on the ground. *valli* twines round the stem or a support; epiphytes are called *vriksharuha*; parasites. *vrikshradane*. Algae and mushrooms are recognized as plants, and are respectively called *jalanele* and *chh'itraa*. The habitat of mushrooms is given in *Sussruta Samhita*, (Sotrasthaan, XLVI); mosses are called *s'ivvata*, and the diseases of the cereals and sugarcane, i. e. blight and mildew, are mentioned as early in the *vinaya texts* (Sacred Books of the East, XX, p 326).

II. Internal Morphology or Gross Anatomy. (*Antarnirmana*).

The detailed study of internal morphology became possible only after the invention of microscopes as late as the sixteenth century. The ancient Hindus distinguished five regions in the body of plants, namely *tvach* (skin). *mamsa* (soft tissues or bast), *asthi* (wood or bone), *majja*. (pith), and *snayus* (fibres in the bast). The Brihadarannyaka Upanishad (III. 9) divides *mamsa* into *valkala* (bark) and *s'akara* (bast fibres). The healing up of wounds by natural recuperation is mentioned in S'ankaramisra's *Upaskara* and in Gunaratna's commentary.

III Physiology, (Vyapara.)

That plants absorb food materials from the soil in a state of solution was already known to our forefathers, as the name padapa for plants shows. The greatest achievement on the part of the ancient Indians was the discovery, not perhaps on a scientific basis of the fact of absorption, transport and preparation of food in the leaves in the presence of solar energy and air. All these facts we find nicely described in two stanzas in the S'antiparva, Mahabharata, 'Just as water may be drawn up by sucking through the lotus petiole applied to the mouth, so also plants (with roots) drink (absorb and draw up the stem), water (watery solution) with the help of the air'.

After the food materials are brought into the leaves through the uninterrupted passages in the stem (xylem vessels) by the suction force developed in the leaves with the help of air, the process of assimilation goes on.

With the help of Agni (Solar energy) and air (Co_2) this water (soil sap which is absorbed through the roots and conveyed to the leaves) is digested, i. e., is prepared into food proper (sneha). And it is on account of the assimilation of this food that plants attain development and become graceful". (See page 306 Supra V. 7.)

Thus all the main factors in connection with the absorption, transport and assimilation of food materials were known to our forefathers long before Stephen Hales demonstrated them in 1727 A. D. Even the knowledge of the storage of solar energy in the particles of food manufactured can be traced to two verses in the Rig-Veda (II. i 14 and VIII, 43, 9). The importance of green leaves in the life of a plant is also noticed.

Circulation of Sap.

Circulation of blood in man was said to be discovered by Harvey in the 17th Century, but the Indian Botanist described it long before the Christian era; it was even discussed by Kanada in his Vai'seshika Philosophy (5. 2. 7) and S'annkaramissra in his Upaskara (Scared Books of the Hindus VI. p. 177) According to the latter, 'water poured at the roots goes up in all directions through the interior of a tree. Neither impulse nor impact nor the sun's rays prevail there. How then is it caused?' The phenomena of osmosis and diffusion were not known to them; hence we find them explaining it thus: 'The action by which 'water rises and causes the growth of the tree results from destiny, (Adrasta-unknown reason) as its efficient cause) and water as its coherent cause'.

Exudation of Sap (Rasasrutī).

It has been clearly described in Rajanighantu. The phenomenon of phosphorescence in plants is noticed and the plants showing this phenomenon are described as jyotishmati jyotirlata. Even in the Kumarasambhavam this phenomenon is mentioned (I. 10),

Growth.

Stages of infancy, youth and age of a plant were noticed. Such conditions as light, food and water necessary for normal growth were well known. The maximum age of a tree is given as ten thousand years the causes of death are given as suitable and unsuitable food, accident and disease.

Movements.

The phenomenon of movements in plants towards what is favourable and away from what is unfavourable, their capacity for sleep by closing up leaves at night, sensitiveness to

touch, and even the opening of flowers at different times of the day are noticed.

Consciousness.

Plants have been regarded as living beings since the Vedic times. Manu writes that plants possess a sort of dormant, or latent consciousness and are capable of pleasure and pain (antahsamjjna bhavantyetc sukha dukha samanvitah). A concise but clear discussion on the existence of life in plants is given in Mahabharata, Santiparva, Ch. 184. Further evidence is to be found in Gunaratna's commentary, Udayana's Kiranavali, Upaskara on Kanada, and the Bhaghavata Purana.

Reproduction and Sexuality.

All the methods of reproduction now known were a common knowledge. In the Vaidyaka treatises of old we find mentioned the following well-known ways of propagation Bejaruha (by seeds), mulaja (by roots), skandhaja (by cutting skhandhe ropaneya (by graftings, layerings), agrabeja (by apices), parnayoni (by leaves) and saunarddhaja?, Illustrations of all these methods are given in the Brihat Samhita, Arthasostra. Manu Samhita, Abidhanachintamani, Sumangalavilasini and numerous other treatises. (See Vrikshayurveda V. 45).

The idea of sexuality in plants is vague and obscure, though there is a discussion in the Harita Samhita (Sarirasthana, Ch. I) as to how seeds are produced in plants. In a few instances, we find a male and a female plant distinguished in the case of Ketaki (Pandanus Odoratissimus) and Tala, (Palmyra) tree; the male of Ketaki is called Silaketaki Viphalā, or Dhoolipushpika and the female one, the Svarnaketaki. But this is based, it seems, on observation.

IV Ecology

Lands were divided into three classes, namely, Jangala Anupa and Sadharana, and the characteristic plants described as early as in the Charakian period. The Jangala is described as the region full of unobstructed open spaces, where a steady, dry wind blows, which is pervaded by expansive mirages with rivers and rivulets scarce, abounding in wells and also in dry and rough sands. Plants given are Khadira, Asana, Badari, etc. (Charaka and Sussruta).

The Anúpa region mostly abounds in rivers and is bordered by seas, swept by cold wind, impassable owing to its network of rivers and sheets of accumulated rainwater. The plants are Vanjula, Hintála, Nárikela, etc (Charka, Sustuta, Varáhamihira and others) The Amarakosa gives the following plants as growing exclusively in water: Saugandhika Kalhára Hallaka, Indeevara, Kumuda, Padmini, Váriparni (Pistia), Múshika-parni, (Salvinia), Jalaneeli (Algae) and Saivála (moss).

The sádharána region is endued with creepers and trees of both the classes; and the plants are: Mandára, Párijá-taka, Santana, etc.

In the Arthasástra (Ch. XXIV, 117, 118) the amount of rain that falls in these regions is given.

V. Nomenclature. (Taxonomy)

The naming of plants was really scientific and educative. Sir William Jones had to admit that "Linneus himself would have adopted them had he known the learned and ancient language of this country". Thy principle adopted can roughly be arranged in the following manner.

- a: Special association:—Bodhidruma, A'soka, Siva-Sekhara, Yajnadumura etc.

- b. Special property:—Medicinal:— Dadrughna, Arso-ghna, etc.
Domestic utility:— Váneera, Dantadhavana, Lekhana, Kar-pása. etc.
- c. Special features:— Phenila (Soapberry) Bahupada, Charmin, etc.,
- d. Special morphological features:— Tripatra, Kesa-parni, lanchangula. Hemapu-shpa, Satamuli, Sataparvika, etc.,
- e. Local association:—Sauveera, Champeya, Magadhi Odrapushpa, etc.,
- f. Environmental association:—Nadeesarja, Jalaja, Maru-vaka etc.,
- g. Other characteristics:—Vakula, Seetabheeru, Mághya, Saradee etc.

It is not to be understood that only one name was given to the plants. As the plants were studied from the medicinal point of view as well, each plant was given at least two names: one for their identification by common people, and the other by the student of medicine. The former was called Parichayajnapika samjna, based on some salient external features, and the latter on some medicinal or other properties, Guna Prakasika samjna. Thus the plant *Sesbania* is called Vakrapushpa (i. e, with papilionaceous flowers and Vranari (foe of boil): similarly, *Ricinus Communis* as Chitrabeeja (with painted seeds) and Vatari (enemy, of rheumatism), and so on.

Classification.

It was based upon three distinct principles, namely

Udbhida (botanical), virechanaadi (medicinal) and annapaa-naadi (dietetic).

Botanical.

Rudiments can be traced to as early as the Rig-Veda (X. 97), and the Atharva Veda (VIII. 7, 4). Manu gives an elaborate classification, so do Charaka and Susruta (See Vrikshaayurveda V. 46-51), such as:—Vanaspati:—Those that bear fruit without flower. Vanaspatya:—Those that bear flower and fruits; also called Vrikshaas. Oshadhis:—i. e. annual plants.

Veerudha, lataa;—Plants creeping on the ground (Prataanini) and twining (valli),

Gulma:—herbs with succulent stems.

Trina:—grasses including bamboos which are described as trinadhvaja; avataanas, drumas, etc,

Plant families as such, or natural orders, were not recognised. But allied plants, or varieties, or even different species were grouped together into what may be called a genus based on floral characters. The specific characters were taken primarily from the colours of flowers. Thus the genus Kovidara includes the white, yellow and red flowered species. The first one is again divided into two varieties. Similarly, Balaa included four species Balaa, Atibalaa, Mahabalaa, Naagabalaa.

Medicinal.

But more stress is given on medicinal and dietetic classification. Charaka divides plants into two main divisions virechana (Purgatives and kashaya- (Astringents-anupana); the purgatives are 600, and Kashayas 500 in number. The Kashayas are divided into fifty groups under ten vargas, or major heads. These include every item of therapeutics.

Susruta, however, classifies plants under thirty-seven sections or ganas. And all medically known till his time are placed under one or the other group.

Dietetic.

The above two ancient medical authorities also classify plants according to their dietetic value. Charaka classifies them under the following six heads, or vargas; 'Sukadhanya (cereals)', 'Sameeddhanya (pulses)', 'Sakavarga (pot-herbs)', 'Phalavarga (fruits)', 'Haritavarga (vegetables, such as ardraka, jambira, palandu, la'suna)', 'aharayogivarga (oils)', and 'ikshuvarga (sugarcane group)'.

Su'sruta's classification is more elaborate and systematic. His fifteen vargas are:—'Saalidhaanya, Vrehidhaanya Kudhaanya—all cereals of different classes; vaidala (pulses). tila (Sesamum), yava (barley), 'simba (bean) and its varieties, phalavarga (fruits), 'saaka (pot-herbs), pushpa (flower), udbhida (mushroom), kanda (bulb and other subterranean bulbous plants), taila (oils), ikshu (sugarcane—more than thirteen varieties or different species of sugarcane are described. See also Bhavaprakaa's).

VI. Plants and Evolution.

Hindu thinkers believed plants to be animate beings placed in the lowest rung of the ladder of evolution. The following verse from the Taittiriya Upanishad (II. i) distinctly shows that the idea of evolution was a familiar one; "From this Aatman the ether was produced; from the ether the air; from the air, fire; from the fire, water; from the water, earth; from the earth, plants; from the plants, man."

The idea of gradual evolution of living beings on earth was known to the Indians long before its conception in the

west. We get a correct idea of evolution from the Vishnu Purana.

VII. Heredity.

The problem of heredity too occupied the thought of our forefathers. Charaka, and earlier still the Brahmanas, raised the question, how specific characters are transmitted, why the offspring is of the same species as the parental organism, say, human or bovine' (Sankara, Brihadaranyaka Bhashya).

Charaka and Susruta, following Dhanvantari, hold that 'all the organs are potentially present at the same time in the fertilized ovum and unfold in a certain order. As the sprouting bamboo seed contains in miniature the entire structure of the bamboo, as the mango blossom contains the stone, pulp and fibres, which appear separated and distinct in the ripe fruit, but through their excessive minuteness are undistinguishable in the blossom, even such is the case with man'. (Charaka-Sareera).

Charaka further assumes that 'the sperm cells of the male parent contain minute elements derived from each of its organs and tissues'. Thus he anticipated Darwin's 'gemmules', and Spencer's 'ids'. Sankara's conception is almost identical. He says: 'The sperm cell represents in miniature every organ of the parent organism and contains in potentia the whole organism developed out of it'. (Seal). This is further explained by an analogy thus: 'The physician should know that like fat (sarpib) in the milk, or sugar in the expressed juice of sugarcane, (the seat of semen) is co-extensive with the whole organism of a man (or animal). Charaka.

VIII. Plant Pathology.

In this branch also the Indian botanist made contri-

butions, and the treatment of plants in health and disease as a subject came to be regularly studied as the time of the Atharva-Veda (VI, 50) in which a reference is made to the Destruction of corns by postiferous insects etc, Sáyana's commentary on this hymn gives a long list of such pests. But the definite mention of 'blight' and 'mildew' we get in the Vinaya Texts (C. X i. 6). The next reference of importance is found in the' Sukraneti where grains are mentioned which might be attacked with poisons, fire, snows, or eaten by worms insects, etc. The Artha'sastra, Agni Purana and Brihat Samhita have each a chapter on Vrikshayurveda. In the last named book etiology, diagnosis and treatment of plants in diseases are given. Bhattotpala, a commentator, quotes another authority, Ka'yapa, who also gives a prescription for diagnosing plant diseases. Amongst the remedies suggested the removal of parts affected, and measures to be taken against fresh infections through the wound etc., are mentioned. Our plant doctors even regarded barrenness of plants as a disease and prescribed remedies for its cure. A whole section is devoted to this topic in Upavana vinoda, a chapter on Arbori-Horticulture in ancient India, in the' Sarangadhara Paddhati.

IX. Botanical Marvels.

Even the possibilities of creating new and marvellous species have been mentioned by the authors of Brihat Samhita and' Sarangadhara Paddhati. Like Luther Burbank of the modern world our ancestors of old tried, perhaps successfully, to transform scentless flowers into very fragrant ones, but their special treatment of cotton plants to produce fibres as red as burning fire as yellow as the feather of a 'suka bird (parrot) and as blue as the sky, was a great achievement, and it is well known that India is the native home of cotton industry and excelled in cotton manufacture even as early as in the age of Mohenjo-

daró. Finally, the study of plant life with reference to its environment was so very intensive that plants were used as indicators in ascertaining the price of things, in economic prediction and as a means of ascertaining the presence of water in a waterless region. Elaborate chapters are devoted to this topic in the above two books.

X. Botany and Allied Sciences

The thoroughness and perfection of the study of the science of plants in ancient India will be evident from the number of sciences that developed out of it. Among these we must include the sciences of Medicine, Agriculture, Arbori-Horticulture and Sylviculture. The perfection reached by the ancients in the science of Medicine at the dawn of human civilization is well known, The science of Agriculture, whose beginning can be traced to the Mohenjo-daro period, also reached a mature state of development in the Rigvedic times and it is still continuing. There is a book extant called *Krishi Samgraha*, bearing on the subject of Agriculture, and there are the sayings of one mythical Khaná, which are full of practical suggestions that are found useful even to-day. Rotation of crops was practised even in the Vedic age and the knowledge of it spread to the West from India. the science of Arbori-Horticulture and Sylviculture were well developed in ancient India. All decent houses (*Vatsyayana's kamasutra*) and places of kings had pleasure and kitchen gardens attached to them. public parks and pleasure gardens were provided by the Government (*Artha'sastra*, '*Sukraneeti*, etc.,) and there were forest departments which were placed under expert forest officers whose duty it was to develop new plantation, administer forest laws and in every way accomplish the economic development of the forest resources of the state.

It is a matter of pride that our ancestors studied plants

as plants and anticipated the moderns in some of the fundamental discoveries of botanical science. It is a pity that this science instead of marking further progress suddenly got a set-back. A darkness extending well over a millennium followed. The light begins to appear again towards the middle of the sixteenth century with the advent of European scholars in India.

[III]

Madhya Yuga.

(From 600. A. D. to 1563 A. D.)

During this period some medical treatises were composed in which the knowledge of systematic Botany was further advanced and the plants were more systematically classified from the medicinal point of view. But there is at least one outstanding publication in this period, and that by 'Sarangadhara, who was a courtier of King Hammira (1283-1301). Of this an interesting chapter, the *Upavana-vinoda*, treating of Arbori-Horticulture deals with plants almost in all their aspects. Some of the topics are; classification of plants, selections of seeds, their sowing, the process of planting, watering of plants after that, protection and treatment of plants in health and disease, nourishment, recipe for a nourishing solution, methods of propagation of plants, etc, etc. This chapter has been edited, translated and published by the writer of this article.

[IV]

Modern Botany.

1. The First Period, (1563-1848 A. D.)

Systematic Botany;— The Portugese were the first Europeans to come to India, also the first to begin the study of the Indian plants. The first book published was Garcia d 'Orta's

Coloquios Dos Simples E Drogas Da India in 1563. It contains descriptions of a large number of plants used as drugs. The edition in possession of the writer is in two volumes containing about 450 pages. The next contribution, *Tractado de las Drogas*, similar in nature, is by another Portugese named C. Acosta and was made in 1578.

The first contribution of really scientific value was made, so far as available literature shows, by Henry Van Rheede, the Dutch Governor of Malabar, at amateur botanist, whose large collection of Indian plants made about the year 1676, was published between the years 1686-1703, under the title *Hortus malabarius*, at Amsterdam, 12 folio volumes with 794 plates, under the editorship of the great systematist Commelyn. The next notable contributions were also made by Dutch botanists, namely, Gerge Everhard Rump (1741-1755)-The *Herbarium Amboinense*; Plukenet (1696-1705) John Burman-The *Saurus Zelanicus* (Plants of Ceylon and Peninsular India) in 1727; Hermann's Singhalese collection (Published by Linnaeus in 1737 as *Flora Zeylanica*) and Nicholas Burman's *Flora Indica* in 1768.

John Gerard Koenig, a Danish botanist, arrived in India in 1768. To promote the study of Indian Botany Koenig with Heyne, Klein and Rottler formed a society under the title of 'The United Brothers' at Tranquebar in the same year, 'the chief object of their Union being the promotion of the study of Botany in India'. The brotherhood widened and before the close of the eighteenth century Flemming, Hunter, Anderson, Berry, John Roxburgh, Buchanan, and Sir W. Jones became its members. They used to exchange specimens amongst themselves, and send specimens to botanists of established reputation in Europe. In this way many Indian plants came to be described by Retz, Roth, Schrader and others in

Europe. One of this brotherhood, Rottler, himself published some of the new species in the *Nova Acta Acad. Nat. Curiosorum* of Berlin. The French were also not lagging in this respect, 'Sonnerat and other botanists of the French Settlement at Pondichery sent out from time to time large collection of plants to Paris, and these were described chiefly by Lamarck and Poiret'.

In the year 1787 through the exertions of Lt. Col. Robert Kyd, the Royal Botanic Gardens were founded at Calcutta, and Kyd became its first Superintendent. Though the object of this foundation was commercial, namely, that by its means, the cultivation of teak and of the Malayan spices might be introduced into a province near one of the Company's chief Indian centres', yet in course of time it became the first recognized centre of botanical activity in India.

Kyd died in 1793, and Roxburgh succeeded him (1793-1814). He has been described as 'the Indian Linnaeus'. His first contribution was under the title, *The Plants of the Coast of Coromandel*, in 1795. His *Flora Indica* is a monumental work in which for the first time in India he drew up a systematic account of the Indian plants. He also left 'admirable coloured drawings of 2,533 species of plants indigenous to India'. His *Hortus Bengalensis* is a catalogue of plants in cultivation in the Royal Botanic Gardens. After him came Mr. Buchanan in 1814. He made extensive tour in Nepal and other parts and his Nepalese collections were described in 1825 by Don in his *Prodromus Flora Nepalensis*. He was succeeded by Nathaniel Wallich (1815-1835). Wallich organized collecting expeditions and his vast collections he took away to London in 1828. These along with the collections of Russel, Klem, Heyne, Rottler, Buchanan-Hamilton and Rox-

burgh were worked out with the help of such distinguished botanists as De Condelle, Kunth, Lindley, Bentham and others, and a catalogue of the collections was prepared by Wallich himself, known to the botanical world as Wall. Cal. During this period the contribution of Robert Wight, chiefly on the Peninsular flora of which a part was published as *Icones Plantarum*, is worth noticing. This latter book contains figures and descriptions of more than 2,000 Indian species. His other publications are (1840-1850) *Spicilegium Nilghirensis*, *Prodromus Flora Peninsulae Indicae*—this last in collaboration with Dr. G. A. Walker Arnot, Prof. of Botany in the University of Glasgow. On behalf of the Paris Natural History Museum, Victor Jacquemont extensively toured in India (1829-1832) and made collections of plants which were worked out by Combessedes and Decaisne.

The contributions to Indian Botany by Griffith, who went on expeditions to the Assam Valley, part of Burma, Bhotan and Sikkim and penetrated Khorassan, Central India and even Malacca. He himself collected 9,000 species and not only described but worked out their morphology. In the *Linnaean Transactions*, his researches on the ovules of Santalum, Loranthus, Viscum and Cycas were published. He collected and wrote much on mosses liverworts, marsillaceae and lycopods and, "he had hundreds of drawings to illustrate his microscopic observations". After his death his MSS, etc., were published in six volumes. Next to Griffith might be named William Jack whose labours were published in his *malayan Miscellanies* and his spared collections are now to be seen in the Herbarium De Lessert in Geneva. Between 1842—1847 Thomas Thomson collected the flora of the N. W. Punjab and during 1847-1849 that of N. W. Himalayas and Tibet. His collections were transferred to Kew and incorporated in the preparation of the *Flora Indica and Flora of British India*.

In 1820 a second centre of botanical enterprise was established at Saharanpur. Here worked Drs. George Govan (1820), Forbes Royle (1823), Hugh Falconer (1832) and W. Jameson (1842). Royle (1839) published his *Illustration of the Botany of the Himalayan Mountains*, and Falconer *Exploration and Classifications of Tertiary Fossils of the Sewalik Range* and Jameson is particularly noted for the introduction of China tea plant into British India.

We cannot conclude this period without mentioning the excellent work on Botany done by Graham, Law, Nimme, Gibson, Stocks and Dalzell in Western India; their contributions are generally confined to the flora of the Botany Presidency between 1839—1861. Another batch of workers, Hardwicke, Madden, Munro and others explored northern India and published botanical papers; a third batch Jenkins, Masters, Oldham and others, collected extensively in Assam, and between 1848 and 1850 Strachey and Winterbottom made valuable collections over the higher ranges of Kumaon and Garhwal and in the adjacent Tibet. In 1845 Voigt published his *Hortus Calcuttensis*.

II. The Second Period, 1848-1935.

This period is interesting in more ways than one. Sir Joseph Hooker worked with his friend Dr. Thomas Thomson. He discovered the magnificent species of *Rhododendron*. His monumental work *Flora of British India* is published in seven volumes (1872-1897) with the assistance of Clarke, Baker, Thiselton, Dyer, Bennet, Anderson, Hiern, Lawson Gamble and others. India will gratefully remember the name of Dr. Thomas Anderson for his labours to establish the cultivation in British India of the Quinine yielding species of *Cinchona*. Sulpiz Kurz published in two volumes. The *Forest Flora of Burma*, besides contributing many excellent papers to

the Journal of the Asiatic Society of Bengal. His other collaborators were Burness, Eyre, Mason, Henry Collett and others. Dr. Aitchieson's List of Punjab Plants was published in 1867.

The Indian Forest Department was in the meantime established. Dr. Lindsay Stewart, Colonel Beddome, sir, D. Brandis. and Messrs Talbot and Gamble made important contribution to the study of systematic Botany of India. Stewart published in 1869 his Punjab Plants, Brandis in 1874 his excellent book, 'Forest Flora of the North-West Provinces of India', Beddome between 1869-1873 his 'Flora Sylvatica of the Madras Presidency' among others. Beddome's 'Ferns of Southern India' (1863) and 'Ferns of British India' (1865-1870) are two outstanding contributions. Other contributions on fern flora of India are by Griffith Clarke and Hope. Talbot published A List of Trees, Shrub and Woody Climbers of the Bombay Presidency, but Gamble's contributions are varied and classic, such as his 'Systematic Account of the Indian Bambusa', and his 'Manual of Indian Timbers'. Among the other forest officers of note, we find for the first time an Indian, Mr. Upen-dralal Kanjilal, who made some contributions. His 'Flora of Assam', which he could not complete, has now been completed by his son, Mr. P. C. Kanjilal.

In the Madras Presidency, botanical work during this period was carried on by Norton, Perrottet, Metz, and others. By the efforts of Bidie and Lawson a second public Herbarium was established in Madras. Dr. Theodore Cooke, Mr. Marshall Woodrow, Mr. Ranade (Indian) and Dr. Lisbon started the public Herbarium at Poona. J. F. Duthie (1871), King (1871), Prain (1897) and Gage (1913) made noteworthy contributions. Of these Duthie's Upper 'Gangelic Flora,' and Prain's 'Bengal Plants' and 'Flora of 24—Paraganas' and 'Sunderbans' are excellent works.

The Botanical Survey was established about 1890, and its Records and the 'Annals of the Royal Botanic Gardens,' began to be published, and monographs of important families, or genera of Indian plants are being published in them.

Economic Botany.

The Royal Botanic Gardens were established chiefly on economic grounds. Royal, Falconer and Jameson were responsible for the successful introduction of excellent apples and many European vegetables. Much work has been done for the improvement of fibre-yielding and other plants of economic importance such as the cultivation of tea, introduction of cinchona, rubber cultivation, and the development of the forest resources of India by the establishment of the Forest Department. In 1883 Government founded the Department for Dealing with the Economic Products of the Indian Empire, and Dr. George Watt was appointed its first Reporter. His monumental work, The 'Dictionary of Economic Products,' is still unsurpassed as regards information and detail.

Though the Forest Department was established in the Bombay Presidency in 1807, it began to work regularly from 1847 with Dr. Gibson as its first head. In the Madras Presidency the Department was established in 1843, in Mysore in 1847, and in Coimbatore and Cochin in 1848. Sir Dietrich Brandis (Calcutta 1856) was appointed later Inspector General of all the Government Forests in British India, and he organized the Indian Forest Department with two schools of Forestry—one at Coopers Hill and the other at Dehra-Dun.

Palaeobotany

The great French Palaeobotanist (1828) was the first to describe a few Indian fossil plants. The next contributions

were made by Royle in 1839 in his 'Illustrations of the Botany of the Himalayan Mountains,' in his 'The Glossopteris Flora' by Dr. E. A. N. Arber (1905), by Oldham, Morris and the great Dr. Ottokar Feistmantel (1863-1886). The next contributions of note are from Noetling (1893), Zeller (1902) Holland (1903-1909), Middlemiss (1909-1911), Seward (1905-1912) and Sahni (Indian) (1920-1933). The Geological Survey was founded in the middle of the nineteenth century and ever since valuable works are being published in the reports and the records and memoirs of this Survey.

Sir William Jones, one of the United Brothers, regarded Botany as 'the loveliest in the sciences of Nature' and founded the Asiatic Society of Bengal in 1784. The Journal of the Asiatic Society for more than a century and the Journal of the Bombay Natural History Society since the beginning of the present century have been the only organs in India in which papers on Indian Botany were published.

Indian Universities.

Though some of the provincial universities were founded in the last century, no actual and earnest attempt at botanical studies by the Indians were forthcoming till the first or second decade of the present century. The foundation of the Medical College in 1835 marked the beginning of the study of Botany in Bengal, if not in the whole of India. Dr. Jadugopal Mukherjee was the first Indian to write a book on Botany, the *Uohid-Vichar* in vernacular, in 1869. and the next attempt was made by George Watt, and his *First Step in Botany* in Bengali was published in 1876. Great movement for the introduction of higher scientific education amongst the Indians was started by some philanthropic Europeans and great Indians like Raja Ram Mohan Roy and Dr. Mahendra Lal Sarkar of India. Students of both sexes also began to

flock to the West in large number for higher studies in science and within a decade or two we find many of them coming back with highest distinctions from great centres of learning.

From 1563 to 1911 about 1510 original papers were published on Indian Botany, general and regional and out of these about 34 papers were by the Indians. Their names are worth mentioning here: N. N. Banerjee (1883-1896) K. B. Bose (1905), U. C. Datta (1877) K. L. Dey (1893), A. Gosh (1902) B. S. Gupta, S. M. Hadi (1902), I. Jaykrishna (1899) K. R. Kirtikar (1901), L. B. Kulkarani, J. Mukharjee (1869), N. Mukherjee (1907) T. N. Mukherjee (1883), K. M. Nandkarni. (1908) and J. B. Singh (1869).

There are now 18 Universities in India and the European teachers of Botany have been mostly replaced by efficient Indians of repute, and important research centres have sprung up throughout the Indian Empire. A large number of original papers are annually being contributed to various journals of Europe and America.

The Indian Science Congress was founded in 1914.

The Indian Botanical Society was established in 1920, "with the object of promoting the study of Botany in India and of bringing into touch botanical workers scattered all over the large country,"

The Bose Research Institute was founded in 1917 and its activities are published annually in its Transactions. To this Institute came scholars like Professor Molisch to learn the methods employed by Sir. J. C. Bose in the study of the Physiology of plants.

We have seen however ancestors began this study in right earnest and developed it into an almost perfect science. Through circumstances of which we have no full knowledge

an eclipse of over one thousand years followed during which Botany along with other sciences was non existent. We have shown how towards the middle of the sixteenth century light came from the West and darkness began to disappear, thanks to the pioneers from the West. It was they who promoted the scientific study of Botany in India and had worthy disciples in the Indians who in their turn are doing excellent work in all the branches of the science.

List of Indians and Europeans who have advanced the knowledge of Indian Botany during 1914—1935:—

1. Systematic Botany]:

Phanerogam — Bruhl, Blatter, Benerji, (S. C.).
Dudgeon, Kirtikar and Bose, Fyson, Sen
Gupta (S. R.).

Moss — Bruhl, Gupta.

Liverworts—Kasyap.

Algæ—Allen, Biswas, Bruhl, Bharadwaj, Iyengar,
Ghosh, Børgesen, Kundu, Benerjee (J.).

Fungi—Butler, Bose, Bruhl and Sen Gupta, Mahju,
Benerjee (S.).

Lichen—Choudhury, Smith.

2. Anatomy—Maheswari, Mullan, Ghosh (E).

3. Plant Pathology—Butler. Bagchee, Choudhuri, Dastur, Mehta. Ajrekar.

4. Physiology and Ecology—Bose (J. C.), Inamdar, Dastur, Parija, Malhotra, Ekambaram Mukherjee, Sing, Sen Gupta (J).

5. Cytology—Banerjee (I.), Maheswari, Bhaduri, (Mrs.) Dutta, Datta (R. M.), (Miss) J. Ammal, Johri, Majumdar.

6. Palæobotany—Sahni Seward.

7. Plant-breeding and Genetics — Howard, Hector, Mitra.

Bibliography.

1. Surapála—Vrikshayurveda.
2. Brihat Samhita—Varáhamihira.
3. Blatter E:—Biblio'graphy of the Botany of British India (1563-1911). Jour, Bomb, Nat. Hist. Soc., Vol. XX, 1911.
4. Bose P. N.—The Centenary Review Asiatic Society Bengal, (1885)
5. Choudhuri, H—Presidential Address, Sec. Botany Ind. Sc. Congress, 1932.
6. King G:— Presidential Address, Sec. K. British Association, Dever, 1899.
7. Muzumdar, G. P.—Vanaspati, Calcutta. 1927
8. Sahni, B:— Presidential Address, Sec. Botany, Ind. Se. Congress, 1922.)

CHAPTER. VII.

Town Planning in Ancient India.*Contributed By***SRI. R. D. N. SIMHAM, B, E., M. E., (Hon.)****I. T. A. A. M. T. P. T.,****(Director of town Planning, Madras.)**

After the excavation of the ruins of Mohan-Jo-Daaro and Harappa in the Indus Valley and of Tauspasida, it has been abundantly proved that the state was taking great interest in the planning and building of cities from the remotest-times. A system of underground drainage existed in the streets of Mohan-Jo-Daaro with brick built channels deep down in the middle of the street systematically constructed with sewage pipes from the houses on each side of the streets. The flooring of the bathrooms inside the houses was sloping towards the street and led away the water into the street pipes. The foundations showed that the streets were lined with many storied houses with doors and windows opening into the streets. As in many other subjects, India was the teacher of world in the matter of constructions of gardens and cities.

[A. L. Editor]

The theme I have to treat of namely " Town Planning in Ancient India " is a large subject and it is difficult to deal briefly with it. It is more so being a science which is so ancient in this land that its origin and importance almost lost in hoary antiquity. Let me try. [I] first, to state the religious

and ethical basis of Town-Planning; [II] second, to deal with the important points and principles involved in the Subject from the stand point of Indian sástras and conception of the subject [III] third to explain the systematic organisation of villages, towns and cities on a socio-political basis; [IV] and fourth, to refer to some of the important rules about site planning and construction of houses.

[I]

(Religious and Ethical Basis).

(First the religious and Ethical basis of Town Planning:— The Indian science of Town Planning goes by the name of Vástu Vidya). I do not know whether I shall be instrumental to adulterating and profaning the religious sanctity of the ancient science, the origination of which is attributed to Brahma-the Creator and the elaboration of which innumerable Sastras and treatises is attributed to the sage savants that followed Him, when I make bold to interpret it in my own way. (Va'stu Vidya and the numerous Silpa Sastras are all derived from Sthupathyaman Upa-Veda under Atharva Veda which goes by the name of its author Atharva-Brahma's eldest son and the first learner and earliest teacher of Brahma Vidya, Vástu Vidya and other worldly sciences.

When the scientist, in his prolonged research, finds himself unrewarded by success, he knows that he must have wandered from God's eternal laws. He must retrace and search for the point at which he stepped aside from His guiding track; he must know full well-walk along His roads; he must follow implicitly His direction posts. And so in practical life; the further we wander from the guidance of His laws, the further we are from perfection; the more we deviate from His designs, the more precarious our progress.

It is through the instrument-the Vedas and Sástras, the channel of our religion that we are able to relate ourselves to that soul of Infinite Life and Power that is back of all that animates all, that manifests itself in and through all. The divine current of Infinite life and power flows perpetually.

We lose much, we remain but part men, if we do not put ourselves and keep ourselves continually in the divine current. Emerson said "Let a man fall into the Divine circuits, and he is enlarged". In the Vedas and Sástras, there is a certainty, there is a calm Puránas we become illumined by Divine wisdom and we become energised by Divine power. Therefore it is, that all our sciences, arts and practices are ever closely associated with religion and all our social, political and civic organisations are adopted to the requirements of religion.

(*Vastu Vidya*).

(Vastu Vidya is almost coextensive with the Silpa Sástras, Mánasára sástras, Tantra Sástras, etc. and also closely interlinked with the Dharma, Artha, Káma and moksha Sástras, the Neeti Sástras, the Aayurveda and Jyotish Sástras. There are about fifty or more tretises dealing with Vástu Vidya) Vástu vidhyápathi, Páuránasaryam, Mánúásá from Visvakarma prakásika, Mayamatam, Mayanoeti, Vástu Rajavallabam, Vastu ratnávali, Silpa sauram, Silpadeepikai Maháutantrm, etc, etc. Some of the current works on the subject are: Maya mool, Krishna Vástu, Maya vástu, Manaiyadi sastram, Bagavathi silpam, Silpachintamani, Sri Lalitha navaratnam, etc. Of these works Maunasauram is the most complete and perfect.

The radical cannotation of the word "Vastu" is very wide. Vastu is the unseen cause or the root principle underlying everything that is seen. Vastu is the all-pervading Deva Purusha in whom subsists all deities. Vastu is also

the ground and the objects and buildings installed and erected on it. Astronomical and astrological works. Jyotisha Sastras contain incidentally dissertations on Vastu Vidya and mention the auspicious months, days and moments for laying the foundation of cities, towns, villages, buildings, wells, etc. In short for the foundation of a va'stu.)

Vastu Purusha.

Va'stu Prusha is considered to be the Lord of both the immovable and moveable worlds and lying with his legs stretched towards the direction of the constellation (rasi) of the zodiac in which the sun (Surya) remains each month and his head placed in the direction directly opposite, that is, in the 7th sign (rasi) from the position of the sun, and having his left hand underneath and right hand above) The usual position in which he is said to be lying down is with his head in and happy possessor in life. Through the Vedas, Sastras and the north-east direction and legs stretched in the south-west direction. Agni is stationed in the part of his head, Apasthan in the face, Aryama in the right breast, Apavasta in the heart, Parjanya right eye, Jayantha right ear, Surya right shoulder and so on. Va'stu wakes up in the months of Chitra and Vaikasi, Audi and Avani. Alpasi and Karthigai. Thai and Masi, that is, in the months excluding the 3rd, 6th, 9th and 12th months of the Hindu year. It is in these months when Va'stu wakes up that buildings are to be erected if dangers, diseases and losses are to be avoided.

Mānasāra defines:—The place where men, rishies and deva's reside is called Va'stu. This includes ground (dhara'), building (harmya), vehicles (yāna) couches (paryanka), etc. Of these, ground (dhara'-that which hears supports and restrains-the country) is the principal subject. The building (harmya) includes the building of cities, towns and villages, temples,

places and houses, pracaaurams, vimáunams and gopurams, práśádams, mantapams and sabhas, arangas, matams and ásrámams etc., The same book gives the following mythical geneology of the apotheosized ancestors of the four classes of dignified planners or architects on earth. "From the four faces of Brahma, the creator of the universe, originated, in order, the divine architects Viswakarma, Maya, Twashtar and Mánava. Their four sons or assistants are respectively Sthapathi, Sutragrahi, Vardhaki and Thatsháka.

(Viswakarma)

(Viswakarma is to this day remembered as the Architect and Engineer of Devas and worshipped by the artisans.) In Southern India, there is a class of people known as Viswakarmas. In Harivamsa, we find that Viswakarma was the chief Planner and Architect of Sri Krishna, the Lord of Dwáarakapuri. (When Sri Krishna first conceived the plan and issued instruction about the construction of *Dwaraka*, the Town Planner Viswakarma made low obeisance to Lord with his humble remarks: "The city would not be sufficiently large for the strength of its citizens. Further enlargement on a magnificent scale would have been more becoming." This expert opinion was not heeded to at that time with the result that after a lapse of a few years, Sri Krishna had to realise the blunder and give orders for the replanning and expansion of Dwaraka on a large scale. The other divine architect, Maya comes next in rank to Viswakarma and from Mahabharata we find that Yudhishthira requisitioned Maya for the construction of a large Council house. Twashtar and Maunava were also venerable Architects next in rank to Viswakarma and Maya. The Rig Veda mentions about Twashtar as the foremost builder, fashioner, and artificer:— It says at one place "When the clever Twashtar had fashioned the well-made thousand armed thunderbolt weapon, Indra

took it to defeat Vrittra'sura and destroying him and his armies saved the world from all calamities. These four men were the expounders of the Vastu and Silpa sastras and the preslders of all constructional arts, crafts and works. Their names may be considered to represent the professions and Schools of of Planning, Architecture, Engineering and Building, respectively.)

The Sthapathi, Sutragrahi or Silpi, Vardhaki and Tatshaka were the names of subordinates or assistants to the four Master Architects just mentioned. They may also be considered to represent the professions and minor Schools of Site Planning and Divisionent Architectonics (including Sculpture and Painting), Mechanics including all structural arts), and Crafts such as Carpentry, Masonary, etc.

Civic Administration.

In ancient times, the civic administration was not conducted as any separately organised body, like the modern municipal council, district or panchayat board of Town-Planning Trust, but the permanent Planners and Architects of the State together with their technical assistants, constituted the essential technical directing and supervising agency and served practically the purpose of the modern civic institutions. The Vastu and Silpa sastras deal with functions of the various experts and assistants in an elaborate way, among which are mentioned the fixation of sites for the founding of villages, towns and cities, the determination of boundaries and approaches, the laying out of streets and roads, the divisioning into wards and blocks, the settlement of sub-division of land into building sites, the setting apart of areas for future expansion or extensions, settling the location, arrangement, design and appearance and the construction of residential buildings, mansions, palaces, council buildings, court houses, museums;

temples, choultries and other kinds of public buildings, construction of wells, tanks and reservoirs, laying out of parks, groves, gardens and woods, construction of forts, moats, and ramparts and numerous other matters. So much so the experts possessed and exercised substantial control over all building operations in a village, town or city. So elaborate and extensive was the control that even absolute ownership of land in a village, town or city was very restricted.

In ancient times the governor or administrator of a village was called Gramadhikari, of 10 villages as Nayaka, of 100 villages as Samantha, of 1,000 villages as Raja, and of 10,000 villages as Maharaja. Every local administrator or king had his own permanent Town Planning Officer with many other assistants, who were well versed in the science of Town Planning and the alleged arts and upkeep of villages towns and cities. The town Planner among his other qualifications must be endowed with ability to establish and direct the development of a village town or city (sthaupanarhah), knowledge of geometry, trigonometry, surveying and estimating (ganitajnah) skill in draftsmanship (chitrajnah) including drawing, painting and perspective (chitralkhana vidya and yadhaurta-chitralkhana vidya), knowledge of every place or locality in the province or country (sarva. desajnah), knowledge of the arts of architecture and Building (sthaupatyam and silpam), and mastery over the science of Town Planning (va'stu vidyaupi paaragah); and they should also be well versed in the Vedas, Sastras and Puranas.

The Aid of Experts.

The Silpa sastras enjoin that temples (alayas), cities, towns and villages, purees, nagaras, pattanas, puras and gramas, houses (gruhas) and all sorts of constructions and sections should not be made without the aid and advice of experts in

Town Planning and Architecture and that if done without such aid and advice it will lead to many evils (dosha) and worries and difficulties (sanchala). The disorderly developments, unkept state of places and buildings, ugly and derelict houses, rubbish heaps and other worse conditions that so commonly preponderate in our modern villages, towns and cities, not only destroys their sanctity, disrupts their organic integrity and distracts from picturesqueness and beauty, but proves very detrimental to sanity and salubrity. Such a policy of *laissez faire* with regard to domestic abodes and habitations makes for financial and physical waste, in as much as the local administration and the State cannot bring them to proper order and condition without going through their demolishing functions in a large measure. Such a state of affairs was well-nigh impossible in the villages, towns and cities in ancient India, because there could not grow any village or town or be built any building or house, without the aid and direction of experts versed in the Va'stu and Silpa sastras.

In Sukra Neeti, it is enjoined that the local administrator or king should also employ among others, persons versed in the art of establishing parks, artificial forests and pleasure gardens (araama - karina - vana - karina) of building forts (durga Karina), road engineer (marga-karakah), and other artisans and workers. All these also were permanent officers under the local administrator or king. The same Sukra Neeti also lays down that the local administrator or king and his minister called the Grihadi Pathi (literally, the ruler of domestic abodes and buildings) who held the portfolio of superintendence of Town-Planning and Building operations, must personally inspect the gramas, puras, pattanas, etc. and must learn the conditions of the citizens, and deliberate upon matters brought forward by the citizens for the development

and improvement of local administrator or the king who with the advice and aid of the special experts, determined the lines on which development and improvement should take place and enforced the observance of the rules and conditions laid down by the Sastras. A great freedom or scope was allowed the experts to display their skill in planning, individual character, and imagination. The citizens may construct their residence as suited their taste, habits and manners and requirements, but must consult the experts and comply with the rules and conditions laid down in the housing and building chapters of the Vāstu and other Silpa śāstras. (Vaastu Vidyaa Kusalah prasastava charak sootra 14)

Live Common Life for a Noble End.

Vāsu Vidya which is concerned with home, village, town, city and Kingdom planning and Indian civilisation are two things for nearly one ideal. A home, village, town, city or kingdom is the manifestation of the spirit of its people, and the larger body for the soul of the family community or nation. To build homes, villages, towns, cities and kingdoms and to "live a common life for a noble end" is the business of large associations of men and of the world. A civilised, contented, happy, convenient, healthy and peaceful life cannot be lived in unplanned and undisciplined homes, villages, towns etc. To make sure that that kind of civilised and noble life will be life of the individual, family, community and the entire humanity every nation has to think seriously of the problems of the home, village, town, etc., and work them out on the basis of the science and of Town and Country Planning.

Mr. H. G. Wells (in his book "The Work, Wealth and Happiness of Mankind") has observed:—" It is small wonder that not only young men and women with an artistic and constructive drive in them, but also business men, financiers

and publicists concerned with the problem of human employment; turn their minds more and more definitely to the immense possibilities, in comfort, creative work and beauty and happiness, of this ever renascent art (of Town Planning and Architecture). Before them a by-no means insurmountable barrier of social and business usage and political stupidity stands in the way of complete reconstruction of human habitations, in which only a lovely, memorable or typical buildings now in existence will be spared. If our present civilisation does not crash, it can hardly avoid this stupendous rebuilding. It is not only that men *can* do it. It is not only that it stirs the imagination as if with trumpets to think of its being done, but as we shall know, it will *have* to be done to sustain the economic machine running. A village, a town, a great city need no longer be an accumulation of huts, hovels, and discordant inconvenient old houses. Now it can be planned and made as one complete architectural undertaking. This is not any sort of Utopian dreaming. It is going on now. Every where in the world building schemes are becoming bolder and more comprehensive."

Vastu-The Indian Science of Town Planning and Buildings.

However, a country cannot be said to be really civilised unless its people follow the path of Religion and act in a cultured and refined manner, for the construction in a systematic and orderly way, and strive to live and work for a better and higher mode of life. If humanity progresses, that is, moves forward, and makes steady advancement, there must inevitably be a sure guide to the direction of that movement and advancement. So far as India is concerned, the Vastu Vidya is the eternal science that furnishes that guide. A true and great science or art is not a mere form, it shows a heart, a soul

gleaming through the form. That soul is expressed by the word "Vastu" Vastu Vidya not only expresses the subjects that is, the Indian science of Town Planning and Building construction, but also the Indian spirit-Indian culture and ideal. It is concerned with not only the material life, works and interests, and needs but also spiritual, social and political aspirations of the people.

Home a Visible Symbol of National Life.

A home, a village, town or city in ancient India was a visible symbol of the family life, community life and a picture depict as it were, on a large canvass of earth, material, spiritual, social and political achievements. It is no exaggeration to say that Vastu Vidya along with the Silpa sāstras had been a surest guide to lead the people of ancient India along the path, of real self expression, and the ancient practices and works of craftsmanship, which were based on such Vidya and sāstras had aided them to wield supreme power and to reach the highest stage of civilisation and provided them the possibilities of a wider control of things for an ideal life. It is, indeed, a legacy bequeathed to us, which provides the means by which we can take India once again to the highest position from its present degraded condition.

The ancient science of Town Planning and the ideal of the ancient Indian civilisation is not to remain as a mere memory but it is to be a dynamic power to be awakened up once more in a new pulse of enthusiasm. As a tree derives its strength from the place of its birth, from its birth, from its perception and quick readjustment to change, and its inherited memory of the past, so our ideas of Town Planning in modern India, have to derive their strength from the memories of the traditional sciences and arts of ancient India and from the Indian religion and culture. Mr. H. V. Lanche-

stor in his book on Town-Planning in Madras, has made the following observations:—"The old traditions of cleanly living, and the old standards of sanitation (in India), only need bringing into relationship, with the altered conditions of modern life to achieve here a remarkable transformation. Again, in building there exists plenty of guiding principles which merely need a little adaptation. "To quote also a sentence extracted from the Ancient and Mediaeval Architecture by Mr. E. B. Havell:—"It will probably be a revelation to modern architects to know how scientifically the problems of Town-Planning are treated in the ancient Indian architectural treatises; beneath the great deal of mysticism, which may be scoffed at as pure superstition, there is a foundation of sound common sense and scientific knowledge which would appeal to the European".

The Spirituality and Purity of the Race.

When our people wrote about grave matters and supremely difficult things to be expressed in ordinary language they used in their works deific expressions in keeping with their pre-eminently religious character. This fact was pointed out clearly in a statement made by Swami Vivekananda in one of his speeches:—"The secret of a true Hindu's character lies in the subordination of his knowledge of European science and learning, of his wealth, position and name to that one principle theme which is inborn in every Hindu child, the spirituality and purity of the race" The religious predilections of the expounders of Vastu Vidya and Sastras made them conceive of the higher spiritual truths and to enjoin in accordance therewith, certain ritualistic, sacrificial and Ta'ntric observances and formalities, in the selection, protection, purification and establishment of sites, homes, villages, and towns, etc.

Dedication to Vaastu Purusha.

Let me deal with a few important points and principles involved in the subject of Town-Planning from the standpoint of Indian sastras and Indian conception. The principal subject which has been dealt with in Vastu Vidya and Sastras is, as I have already told you, ground or site for human habitations (dhara). Every site or piece of land is conceived as being composed of a number of parts and each part is held sacred to and named after a deity. The site as a whole is considered to be occupied or presided over by Va'stu purusha, his body and limbs occupying certain fixed chambers. For this reason, and also because the various parts of a site are assigned to different deities, it is essential that before utilising the site for various purposes, the scheme of dedicating the parts or positions in the site should be clearly understood.

Divisions with Padas or Parts.

The orthodox rules of the Vastu Vidya and sastras require that the number of 'padas'-parts or units in a site may vary from one to 1024-in accordance with its area, purpose for which it is to be put and structural requirements. The mode of division into parts (padas) was by drawing mystic diagrams on the ground, so that in each case, the number of parts or units corresponds to the square of the serial numbers from 1 to 32. Each of the 32 Schemes of division of a site is designated in serial order as Sakala, Pechaka, Peetha, Maha Peetha etc. ending with the 32nd Indrakantha. In the case of sites for houses and for villages, the divisioning into parts given by the squares of the numbers 7, 8 and 9, that is, 49, 64 and 81 parts is commonly adopted and these systems go by the names of Sthandila, Chandita and Paramasayika. The divisioning into larger number of parts or blocks arrived at by the squares of the numbers from 10 to 32 is adopted in the case of large

sites for town and cities (pattanás, nagaras and purees). The various apartments into which a site is divided are allotted to deities such as, Aparanjita, Aparatihata, Jayanta, Vâijayanta, Siva, Vaisravana, Asvina and Vishnu, etc.

Religious Rights.

Such Systems of subdivisioning gives an individual tone to the sites and their different parts and aids in establishing every thing in its own appropriate place or quarter. Some religious rites are also to be performed when the demarcation of site and divisioning into parts is undertaken, when the foundation of a building, village, town or city is laid, and when a place or a building is occupied. The demarcation of sites, the assignment of parts and the denomination of the various plans and systems and their appellations are the notable characteristics which the pre-eminently religious character of the expounders of the Vâstu Vidya impressed upon the civic arts.

The Planning of Dwarka by Sri Krishna.

Devi Puranam gives the following account of the directions given by Sri Krishna about the planning of Dwaraka:—Let temples be erected. Let there be appropriate selection of building sites and proper placing and spacing of buildings. Ascertain the ordination of buildings. Create squares and parks at suitable localities. Lay out wide Royal roads. Thus ordered, the experts with the help of the Yadavas engaged for the purposes, began the construction of the city in right earnest; demarcated the city area; measured up the boundary lines; carried out the division of sites, and on an auspicious day made offerings to the presiding deities of the Va'stu. When they were thus ready to commence the work of city construction, Sri Krishna reiterated his instru-

ctions and laid special stress upon the establishment of divine edifices. They carried out the orders reserving sites for parks and gardens.

Tutelary Deity of the Town.

Agni Purana says: "Vishnu, Hara, Soorya, Chandra, Indra, etc. should be worshipped before founding a town or city and offerings should be made at the instance of the founder". "A city, town, village, fortress or a house not having tutelary deity of its own, is devoured by the evil spirits, and becomes infested with fell diseases or pestilences". A city, town, village for trees or dwelling, protected by a deity, becomes thriving and prosperous and ensures victory, enjoyments of earthly good, and finally salvation to the inhabitants.

There is nothing in all Indian literature, of greater significance for the modern Indian mind than the scene described in Ramayana by Valmiki in which Hanuman contends in the darkness with the woman who guards the gates saying in muffled tones, "I am the City of Lanka". Cities and towns in ancient times were more than centres of trade and corporate life; they were ultimate resorts of the people even against invasion. Sister Nivedita has said:—"The ground on which a city stands is in truth a great hearth place of human love, a veritable altar of spiritual fire. From end to end of the peopled earth, we shall find where ever we look, that man makes his home of a surpassing sanctity to himself and others and the divine mingles with domestic fire on every hearth."

Auspicious Days and Months.

(Vastu Vidya incidentally is concerned with astronomical sastras; for the simple reason that the auspicious months, days and movements for the foundation of a Vastu are to be determined.) All the months except the 3rd, 6th, 9th and 12th

months of the Hindu year considered auspicious months for establishing any construction or for newly commencing any works. (It is a common saying in Tamil-Aauni Aadi Yadanthey, Kuuny, kudi poggéthey"—Do not start or commence the laying of foundation in Aanui (June), nor set out to occupy a building in Panguni (March).) Mayamata objects to the establishment of human habitations in the months of Aaudi, Pooratasi, Margazhi and Panguni for the reasons that Ravana's destruction was in the month of Aadi, that Hiranya's destruction took place in the month of Pooratasi, that the Maha Bharata war was in the month of Margazhi, and that Brahma lost one of his heads in Panguni. The Silpa sastras say that the 6th to 9th, 15th to 18th and 24th to 27th Nakshatra days being declining days are undesirable for constructing any house, palace, temple, etc. The 3rd, 12th and 21st Nakshatra days are considered as legless days, the 5th, 14th and 23rd Nakshatra days are trunkless or bodiless days and the 7th, 16th and 25th Nakshatra days headless days; and therefore in these days no construction should be commenced or made; and any construction made on these days will become destroyed or deserted. The months most auspicious for constructing buildings with their entrances on the east, south, west and north are Asvani, Kartigai, Masi and Vaikasi respectively. Constructions commenced during particular planetary position and conjunctions which are auspicious will stand for hundred of years and those who live in them will be wealthy, healthy and happy. Construction should be avoided when planets are in inauspicious positions and conjunctions.

[II]

(Classification of Sites)

Va'stu Vidya classifies localities for human habitation under three heads, high, middle and low, and enjoins the

selection of a site in a middle country neither high nor low. The importance of such a location which is to be neither high nor low may be understood from the observations made in the Kalpasthanam- treatise on Indian Pharmacy: "All countries are situated either high, low or middle. (1) The first, Jangala desam is a mountainous or hilly tract in which shrubs are thorny and trees very large ; salt water found by digging deep; The air clear and serene and horizon appears at an immense distance. The people usually thin and fond of home. Adversity affects them and the few disorders they are subject to, are chiefly nervous (vatam). (2) The second, Anoopa desam is low country. It has a luxurient appearance proceeding from general verdure and abundance of tanks which are covered with aquatic plants and contain numberless fish. Trees large and the plain is studded with palms and date trees. The inhabitants are subject to catarrhal and heemorrhoidal disorders, to obstruction in the abdomen and to swollen legs. They are in general indolent, large and have soft flesh. The disorders they are subject to are phlegmy (seetham). (3) The third sádháranam is ordinary country. The air somewhat dusty and dry. The people are in general active, average build and fond of singing and dancing. They are drowsy and in the habit of drinking without being able to quench the thirst. Trees ordinary and the plain overgrown with shrubs. The disorders affecting the people are choleric (pittam). The intermediate regions approach according to their positions either of these three, or are either Jángala Sátharanam or Anoopa-Saatháranam. The best medicinal plants and trees grow in these regions. Their inhabitants are generally very healthy and lead a good and pious life.

Classification of Soils

Silpa sástras differentiates soil for buildings of different communities into four orders:—*White soil* which has the smell

of ghee, in which Kusa grass thrives well, which has sweet taste and in which the air current is towards east, and in which fig trees grow well is above all blame and is the first class Bramhana soil and is said to be conducive to happiness; *Red soil* which has the smell of blood, in which sara grass thrives well, which has an astringent (thubar) taste and in which the air current is towards south and in which *peepul* trees grow well is the next best soil and 2nd class Kshatriya soil and is said to be conducive to courage and vigour and allround health. *Yellow soil* which has the smell of rice (food), in which arugam grass grows well which has sour taste in which the air current is towards west and in which plaksha trees thrive well is the 3rd class Vaisya soil. *Black soil* which has the smell of wine, in which kausam grass thrives well, which has pungent taste, in which air current is towards north in which banyan trees thrive well is the 4th class Sudra soil. The worst is the green Soil which is saline and bitter and in which the air current is unsteady. If frogs, lizards, spiders and crabs are found, the soil will be good for habitation. If serpent, scorpion and other poisonous insects are found the soil is dangerous; If charcoal is found the soil it will lead to diseases; If husk is found loss of wealth; if bones, and ash skulls and hair are found there will be danger from fire and houses built on the soil will be completely destroyed to ashes sometimes in the future. If minerals, stones, bricks, cow-horn, grains are found, the future will be prosperous and long happy life may be expected. If moths are found the soil should be abandoned. The soil in which all medicinal plants, trees, creepers grow luxuriently, which is of good smell and taste, of good colour, which is plain without ups and downs, and which is without pits and holes, is the most suitable soil for habitations.

Testing the Soil.

Here are some simple tests for finding out the fitness of the soil. You need not go the Research Institute for this.

1. Water test for poracity:—

Fill a pit one yard deep with water. Wait one night and see. Absolute dryness indicates too much poracity. Hollow Subsoil is condemned. This is because no plants grow in such a place.

2. Lamp test for purity of sub-soil air:—

Light four lamps in a pit nine inches deep. All the four lights should burn brightly. If only one or two lamps burn, the land is condemned.

3. Earth test for hardness:—

Fill a pit one yard deep with the same contents. Excess is best. It is because if the soil is loose, plants grow very well.

Main Roads and Streets.

In the planning of towns and cities it is necessary to visualise the pre-existing arteries of communication natural and artificial, of the site with other towns and cities of the kingdom, or with other centres of agriculture, industry or commerce. Obviously a regional point of view is necessary as towns and cities under the system of Indian Planning form part of a whole. The relation of the particular town or city to the region surrounding it, as well as the district and the province or desa as a whole, must receive serious attention. Then the main structure of the town or city plan would be settled by the site itself and by the system of planning to be adopted.

In regard to internal arrangements of the town or city, the Sukraneti-sāstra says:—"The city is to have the admini-

strative buildings and council houses in the centre, must ever be provided with wells, tanks and pools, is to be furnished with gates in the four directions, is to have goods roads and parks in rows, and well constructed buildings, temples and rest houses or shelters for travellers". The main place of commercial, political or social activity must be easily accessible to all, hence to be located in the central area. There must be many lines or rows of roads and these are to be parallel to one another both in the straight and transverse lines. And as the parks also must be laid out in rows, they must necessarily be many in number, the implication is that the town or city must be sufficiently large and must provide not only the means of communication but also a large number of places of public resort and amusements for the large population residing in the town or city.

The roads and streets are classified under the Indian system of Town Planning into three main types; firstly, the highways of the province and districts, *Desa márgás* and *Gráma-márgás*; secondly the main arteries of traffic within the town or city, *Rája-márgás*; and thirdly the intermediate cross streets dividing and giving access to the sites for buildings, *Margas*.

(1) The *Desa-margas*, the provincial highways of the country like the Grand Trunk Roads, should be as wide as 30 dhanus or 180 feet in width (2) the *Grama-márgás*, the district highways and through country roads, should be 20 dhanus or 129 feet wide; (3) the *Seema-márgás*, the arteries communicating important towns and ultimately joining with the provincial and district highways, should be 10 dhanus or 60 feet wide; (4) the *Pura-márgás*, the connecting roads between one village and another, should be 8 dhanus or 48 feet wide (5) and the local *márgás*, the ordinary village cars-tracks, should

be 4 dhanus or 24 feet wide. (These widths are according to Brahmánda Puránam and Kautilya's Artha-Sástra).

On the subject of width of roads and streets within towns and cities, several authorities of Town Planning advocate different widths. Generally the following widths for different types of streets are specified.

(1) Principal Rája-márgas the royal roads or main arteries should be made as wide as 10 dhanus or 60 feet ("so that men, horses, elephants and vehicles can have free movement without interference and collision").

(2) Secondary Rája-márgás—The main roads or streets—should be made as wide as 8 dhanus or 48 feet, 6 dhanus or 36 feet and 4 dhanus or 24 feet, according to the sub-division of blocks, the number, character and height of buildings or dwelling houses, 45 feet, 30 feet and 22 1/2 feet respectively are also prescribed for the Rája márgas or streets (Sukra-neeti sástra). The road that goes round the village, town or city should be 5 dandas or 30 feet wide.

(3) Ordinary margas—cross roads or approach roads to gardens, parks, groves and forests—should be as wide as 4 dandas or *i. e.*, 24 feet wide.

(4) The roads in towns, cities or villages should have sufficient width to allow the following:—

(a) 'marga' (rathya)—carriage way, not less than 10 cubits wide or 15 feet; *i. e.*, to provide for two vehicular traffic ways, each measuring a width of 5 cubits or 7-1/2 feet.

(b) 'veethi'—avenue way or open space in front of buildings, not less than 5 cubits or 7-1/2 feet wide.

(c) 'padya' (nrinaum-marga)—Pedestrian way or foot path, not less than 3 cubits or 4-1/2 feet wide.

(d) cattle way, not less than 4 cubits or 6 feet wide. The Rája-margas should be used for the conveyance of marketable commodities.

The number of main thorough-fares in a city must be adequate for its size. The Sukra-neeti-sástras says— "The king should lay many roads according to the type and size of towns". The maximum number of arterial roads or chief highways that a city may have is 33 lengthwise and as many breadthwise when it will have the maximum number of 1,024 blocks. The author of the Rajavallabha says:—"The best city has 17 thoroughfares lengthwise and as many breadthwise; the mediocre has four less i. e., 13; and the worst 9, this being the least number of longitudinal royal roads in a city worth the name". According to the Mayamatam, in a city or town the streets running from east to west may be 12, 10 or 8 in number and as many may be running from north to south, or their number may be odd so that it is 11, 9 or 7. According to the Máunasára, in a town or, large village the streets running from east to west may be 9, 8 or 7 in number and as many may be running from north to south.

- (1) The town plan with 7 thorough fares running in transverse directions is called Mahábhadrám;
 - (2) With 8 such thoroughfares is called Subhodram;
 - (3) With 9 such thoroughfares is called Jayaangam;
 - (4) With 10 do. do. Vijayam;
 - (5) With 11 do. do. Sarvatobadrám.
- and so on.

The Sukra-neeti-sastra lays down the following rules regarding streets and roads:—

- (a) Obstructions to roads must not be at the gate of a place or a temple (there must be a large open space in front of such place or temple).

- (b) On both sides of the road houses should be arranged according to the status of the inhabitants.
- (c) They are to be made like the back of tortoise *i. e.*, high in the middle, and provided with culverts and bridges.
- (d) The road should be provided with drains on both sides for the passage of water.
- (e) All houses must have their frontage (*i. e.*, faces) on the raja-margas or road; and at their back-yards there should be latrines.
- (f) The houses should be arranged in two rows.
- (g) The king should have the roads repaired every year with metal (broken stone) or gravel.
- (h) For the construction and repair of the streets, the king should collect dues or taxes from those who use or derive benefit from the streets.
- (i) Expansive trees, shrubs and creepers are to be carefully planted in villages and towns; the good trees at a distance of 20 cubits or 30 feet from one another, the middling at a distance of 15 cubits or 22-1/2 feet and the ordinary ones at a distance of 10 cubits on 15 feet and the youngest at a distance of 5 cubits or 7-1/2 feet.
- (j) Those trees which bear good flowers should be planted very near places of habitation.
- (k) Wells, tanks, ponds canals should have convenient steps, should have width twice or thrice the depth and should have roads or footpaths round them. There should be many of these so that there may be plenty of water in the kingdom. Bridges should be constructed over

rivers. There should also be boats and water conveyances.

(l) One should not obstruct a road though he is capable; and even the king should not go into a market place in a conveyance though that is good enough.

(m) One should give way in the road to elders, the diseased, the corpse, the king, the respectable people, the saints, and also to those who go in conveyances.

(n) One should keep 5 cubits or 7-1/2 feet from the carriage, 10 cubits or 15 feet from the horse and the ox.

(o) One must never obstruct the tanks, wells, parks, or place hindrance to the use of religious houses, temples and roads, nor must one hinder (the movements of) the poor, the blind and the deformed.

(p) The roads must always be maintained in good condition for the convenience of travellers and passengers. And those who are oppressors of travellers must be very carefully repressed.

Slope of the Ground.

Silpa sastras further differentiate ground according to the general slope of country towards the cardinal directions:— East sloping ground is the best, North sloping ground comes next, West sloping grand not desirable and South sloping ground undesirable. The ground which is elevated on the south-west and sloping towards north-east is highly recommended as one which is productive of wealth, happiness, health and long life. Several authorities on Vastu and Silpa

sastras are unanimously extolling the easterly, declivity of a ground because of the full benefit of the morning sun derived by such ground. A declivity towards north is conducive to the well being of man. A west-ward slope is considered to be destructive of peace and prosperity while a southerly declivity is responsible for all insanitariness and diseases. A ground with depression in the middle is most destructive of health, prosperity, happiness and knowledge. It may be observed here that the prevailing winds and rains in India are mostly from the west and the south and therefore if the grounds slope towards these directions, the village, town and buildings will be more seriously exposed to every storm and shower. Also too much exposure to the northerly winds of the summer which is the season of epidemics in India would not be conducive to salubrity of the places of habitations.

*1. "Gaja Prushtam is land which slopes to the South, South-West, and North-West. Living in such land prolongs life".

2. Koorma Prushtam is land which is elevated in the centre and slopes to all sides. Dwelling in such land is comfortable in all seasons.

3. Madhyoshtam is land precipitously high in the centre.

4. Nagaprushtam is land which is narrow and over elongated east to west."

(*Vastu Ratnavali, Telugu Page 6.*)

The last two condemned.

Characterness of Human Habitations.

Silpa sastras enjoin that human habitations should be set up in a place which abounds in various trees, plants and

* The star marked portions are taken from *Town Planning Ancient India* by Dr. A. Lakshmipathi.

shrubs, is rich in cattle, birds and other animals, endowed with good sources of water and supplies of grain adorned with pleasant forests and vegetations, is an even grounded picturesque plain which is to have the beautiful share of a half moon, circle or square. It is significant that the Sastras lay stress upon the presence of trees and shrubs and selects a place which is well-wooded. The climatological, sanitary and economic importance of trees and forests is well known. The ground selected for habitations should be growing superior medicinal plants, trees, creepers and vegetables, should omit sweet flavour, should in every way be a lovely place, flat and even country without burrow pits and holes and should be elevated. The sastras require that, village, town and city plans and house designs shall invariably incorporate provision for the attainment of beauty, convenience, sanitation and none-the-less important "amenity", and the more important of all these, the garden planning ideal. The latter ideal, if satisfied, will it is stated secure naturally the other matters to a great extent very economically and simply. This garden ideal is not a new introduction into India but is one born with the people as agriculture is, and appreciated as part of the essential means for their livelihood. We have only to consider, how our wealth and support of life mainly and essentially lies in the products of the vegetable kingdom—such as, crops, plants, shrubs, creepers, roots, trees, etc., to realise the supreme regard paid towards the maintenance of fields, gardens and woods as an essential part of planning houses, villages, towns and cities. Then all the nations in the world, we to a greater extent depend upon the food stuff prepared out of grains, vegetables, greens, plants, leaves, flowers, fruits, barks, juices, roots, etc. Our medicine, dying colours, scents, oils, manures, wood (for construction of buildings, boats, carts, vehicles, bridges, implements and fuel), silk, fibre and cotton goods,

furniture and numerous other things are all derived from the vegetable kingdom. Sastras dealing with "Ayurveda" proclaim the supreme merit of a tree in the following terms:—"Man gets many things that he requires from trees, including food, drink, pure air, water, shelter, convenience, happiness and contentment, so that planting of a tree has been considered to be a very great meritorious act. The constructions of a well which would be useful to the people for drinking and bathing purposes is no doubt a meritorious act but the construction of ten wells cannot equal that of the construction of a pond; more than ten ponds the construction of a tank with flight of step to get down to the reaches of water shall be merited; more than the construction of ten such tanks is merited the begetting of a good son (who would be useful to the country in many ways); and more than begetting ten good sons is considered meritorious and beneficial the planting and maintenance of a single tree".

Asokas Edict Regarding Tree Planting.

An Asoka Edict enjoins a system of medical aid for men and animals throughout the Priyadarshi's dominions, and orders trees to be planted and wells to be dug in many places and along the sides of all principal roads. 'It runs as following; In all the subjugated territories of the King Priyadarshy, the beloved of the Gods, and also in the bordering territories as Chola, Pandya, Saiyapootra (Andhra), Keralapootra and Tambrapurney (Ceylon), it is proclaimed, and Antiochus the yavana ruler, and these princes who are near to and allied with that monarch, universally are appraised that two design have been cherished by Priyadarshy, one design regarding men and another regarding animals; and whatever herbs are useful to men are useful to animals, whatever there are none, such have been everywhere caused to be conveyed and planted;

and roots and fruits whatever there are none such have been everywhere conveyed and planted; and on the roads wells have been caused to be dug and trees have been planted for the respective enjoyment of animals and men."

Prevention of Rapid withdrawal of Moisture.

Magesthenes has noted down the beauty of towns and cities in India as he travelled through them, in his descriptions of them. He says the towns and cities are "built high above the flood level". "The shady tress set in clumps and branches woven together by some special contrivance of horticulture" struck him most, and the more impressive thing about the beauty of our climate he observed is that "the trees themselves are of the sort that are always green, they never grow old and never shed their leaves, some of them are belonging naturally to the country and some are brought from distant lands with great care and these adorn the places and give them glory". The influence of trees on climate is to prevent the too rapid withdrawal of moisture from the soil, a point of great importance in this country, where the heat of the sun is intense and the supply of water is largely dependent upon the periodical falls of rain.

First Plant Trees-Then Erect Premises.

Viswakarma Prakasika lays down this rule viz, Frist plant the trees and erect the premises there after; other wise they will not look seemly and gracelul. The remarkable feature of all our towns and villages was the big boulevards and garden belt circumscribing them, the beautiful parks and gardens in different parts of their area, the beautiful avenues along approach roads, highways and main arteried, and each house and building located in a garden plot of its own. A function of the garden belt and the planting of trees throughout the village, town or city is to be protective of amenities, and

procurement of health and several needs of people. The belt of trees surrounded the village, town or city and lines of trees surrounded the blocks of habitations, in the same way as the garden surrounded the houses. The amenities and actual needs of a village, town or city benefit exactly as the house does from its garden. Mayamáta prohibits the planting of cotton, agatti (dadrugna), palmyra, jambu, neeli, yercum, tamarind, castor plant silk cotton (ilavam), Moringa, Iluppa. etti, aralli which are likely to effect health, life, wealth, happiness and fame. Mánasara however says that tamarind tree may be planted in the back garden in the south and north corners. None of the trees should be planted as to cast shadows and shed leaves over houses and buildings. The tree is considered to be the most suitable for being planted in house sites and along roads and streets. The Tamil saying is 'Veettil azhagu Vembu adiyaaum' the shade of neem tree gives grace to a house. One neem tree cools the whole house and protects the health of its residents.

[III]

Site Planning and Building Principles.

Now I shall describe briefly some of the principles and rules about site planning and construction of buildings laid down under the ancient sciences of Indian Town Planning.

(1) First lay out the village, town or city and then only plan the houses. Violation of this rule portends and brings evil. (Visvakarma-prakásika).

This rule lays stress upon the importance and necessity of planning a village, town or city as a whole and of every land within it in advance of building operations. It contemplates upon the systematic and comprehensive plan of a village, town or city—its boundaries, its shape, its roads and streets, the division into wards, blocks and allotments, reser-

vation of sites or plots for communal and other general public purposes, the distribution of sites for dwelling houses and other buildings, and all other matters concerned with the planning of the whole village, town or city consistent with the social, industrial, commercial, administrative and political needs. It aims at conscious planning at every stage of the growth of the village, town or city, from the very foundation, and the exercise of care and fore thought in its development, and the making of deliberate efforts to improve and expand it from time to time, on orderly lines. It warns also that an unconscious growth of houses and buildings without settling their proper location and arrangement, leaving insufficient space for roads and streets and other civic factors and upsetting the arrangement of social and religious systems, is detrimental to the interests of the general community and of the individual citizen and would seriously interfere with the convenience, healthy living conditions, amenity, and prosperity of the inhabitants.

(2) The smallest extent of site for a dwelling house is a manai' or one ground—equivalent to 2,400 square feet, or 18th part of an acre, or 24th part of a cawny: and according to the status of the people the extent of site should be twice, thrice and four times the smallest extent—i.e., 2 grounds, 3 grounds and 4 grounds. (Mánasára).

This rule determines the allotment of land into sites for dwelling houses according to the status and requirements of different classes of people. It also regulates the density and character of planning dwelling houses. The density of houses is to be 18, 9, 6 or 4 respectively; in no case more than 18 houses to an acre of building land. The rule also implise the principles which may be expressed simply as one site, one house—every one designed for one family.

The Sukra-neeti-sāstra lays down the following rules in regard to the allotment of sites by the king.—

- (a) The king should grant lands in the villages to all classes of men, high, middle and low as well as also in the towns and cities, for the houses of men with families.
- (b) To the lowest class the land given (in a village) should be 32 cubits or 48 feet in length and half of that in breadth i.e., 48 x 24 feet; to the highest class the land should be doubled this in measurement i.e., 96 x 48; and to the middle class it should be one and a half that of the lowest class i.e., 72 x 36 feet.
- (c) The land in each case should be just adequate for the members of the family, neither more nor less.

The proper form of a site for a dwelling house is a rectangle, the length being twice the breadth.

(3) In no case more than half the extent of the site shall be built upon. (Maanasaara).

This rule determines the extent of open space that should be left in a site for a dwelling house to secure proper circulation of air and the planting of gardens adjoining each house.

(4) First plant the trees and erect the premises thereafter; otherwise they will not look graceful and seemly. (Viswakarma-prakāsika).

This rule lays stress upon the planning of garden villages, garden towns and garden cities, with the garden houses located in them. It points out to a remarkable feature of all our villages, towns and cities, the big boulevards and garden belt

circumscribing them; the beautiful parks and gardens in different parts of their area; the beautiful avenues along approach roads, highways and main arteries, and each house and building located in a garden site of its own. A function of the garden belt and planting of trees throughout the village, town or city, is to be protective of amenities and procurement of health and several needs of the people. The belt of tree surrounds the village, town or city, and lines of trees surround the blocks of habitations, in the same way as the garden surrounds the house. The amenities and actual needs of a village, town or city benefit exactly as the house does from its garden.

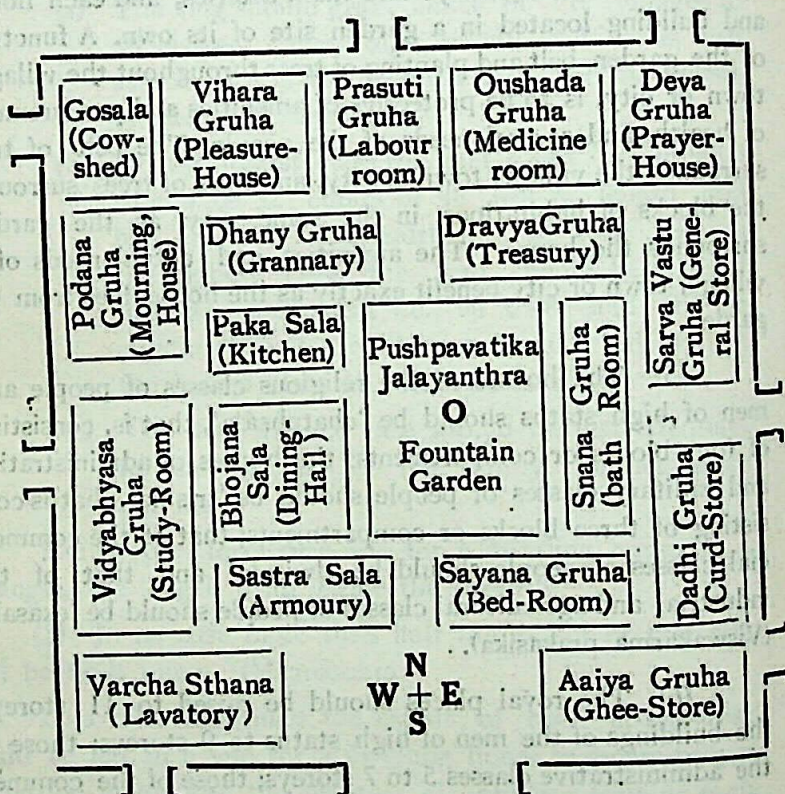
(5) The houses of the religious classes of people and men of high status should be 'chatuhsála', that is, consisting of four blocks or compartments; the houses of administrative and military classes of people should be 'trisála', that is consisting of three blocks or compartments; that of the commercial classes of people should be 'dwisála' and that of the industrial and agricultural classes of people should be 'ekasála' (Viswakarma prakasika).

(6) The royal places should be raised to 11 storeys; the buildings of the men of high status to 9 storeys; those of the administrative classes 5 to 7 storeys; those of the commercial classes 4 storeys; and those of the industrial and agricultural classes 1 to 3 storeys. (Mayamatam).

The Manasara lays down the number of storeys in a different way and according to it the lower classes (the industrial and agricultural classes) must have houses of not more than a single storey.

You can see from the following plan that our ancients had a separate accommodation for each and every purpose. (Vibhakta Karma Kakshah)

Plan of a House with Accessory Buildings (Upakarana Gruhani)



(Vastu Ratnavali Telugu-Page 65.)

The simplest house should consist of at least two parts-Bahya Gruha and Anthara Gruha, the outer and inner compartments, both of which have been traditionally carried down to the present day through generations of Mussalman administration as Divani Aam and the Divani Khas. Divani Aam is the hall of public audience and the Divani Khas is

private chamber. The Tulasi plant has till now remained as the solitary representative of the inner flower garden.

The Brihat Samhita lays down that no building (except temples) should be more than 100 cubits or 150 feet.

It is enough to understand from this rule that a definite number of storeys has been prescribed for the particular classes and that it varied according to the status of the people. Sound Town Planning requires that there must be some correspondence between the width of the street and the height of the building rising along it. In ancient India, planning has recognised the inter-relation between the site, the breadth of a street and the status or rank of the residents in that street or locality. This rule works out in such a way that high class buildings lie along the arterial roads and wide thoroughfares, while the ordinary and low class buildings lie along comparatively narrow roads and streets, so that in all structures along a particular street the number of storeys is the same. It is obvious that some definite proportion between the height of buildings and the width of streets has been adopted in practice in the ancient days.

(7) As far as possible the height of buildings in the same street should correspond. (Viswakarma-prakasika).

This rule aims at securing certain amount of uniformity in the height of buildings in a particular street or locality. The absence of a uniformity in the height of buildings on the same street detracts from the good appearance and beauty of the street.

(8) A deviation from the fixed measurements of lengths breadths and heights of the respective classes of buildings is not good and should not be made. (Brihat Samhita).

This means and ensures all-round uniformity of sites and buildings in the same street or locality. Haphazard irregular plotting of sites and irregular heights of buildings would be the most distressing features in the village, town or city development. It is only a system, a regularity even in the variations of the extent of sites, size of buildings and height of buildings, that augments convenient and economical development, good arrangement and artistic beauty. Even the same style of architecture is to be followed in their broad features in the construction of buildings along a particular street or thorough-fare.

(9) In front of every house there should be an open fore-court or front yard (veethika) which should be as wide as one-third of the breadth of the house. (Manasara, Brihatsamhita, etc.).

This rule clearly lays down that no building should be constructed or brought forward to the edge of the street. It prescribes a building line for the street. Such building line should be uniform and if this is to be the case the frontage widths of house along the street should be uniform. In the case of a street with houses having a frontage width of 24 ft, the front yard should be 8 feet in width; for frontage widths of 30, 45 and 60 feet, the front yards should respectively be 10, 15 and 20 feet. The veethika or fore-court may be a raised platform or a garden with seats.

(10) In front of every house there should be a verandha and with a flight of steps leading from the high plinth of the verandah to the fore-court level. It is desirable to provide verandahs on the other three sides of the house also. (Manasaura).

This rule suggests a high plinth level and verandahs for protection from rains and sun.

(11) Every house should face the main streets and in the rear or on the sides there should be a passage to give access to the backyard for removal of offals and night-soil. (Sukra-neeti sastra).

The first part of this rule makes it a duty to construct houses so as to abut or face the wide main streets. It is objectionable to build houses facing narrow streets and lanes. By building the houses facing the street, their architectural elevation also will be regulated.

The second part of the rule requires the provision of back open spaces where the latrines should be located and also of suitable access to the backyards for removal of offals and night-soil.

(12) A house is to have three, five or seven rooms. The rooms should be separated by walls or other partitions. The house is to be opened at 8 places. Two doors in each of the four sides are efficacious in giving prosperity and healthy children to men. The doors must be placed there, and not anywhere else. But windows in each room may be placed according to one's liking. (Sukra-neeti-sastra).

(13) The front, middle and back doors of a dwelling house should be so designed as to be the same level and in the same line with one another. Let the outer door be placed not exactly in the middle of the facade but a little moved to one side. The general practice is this:—

If the front of the house is divided into 9 parts, the door should be placed on the fourth part on the left, if divided into 8 parts on the fourth part on the left. (Manasara).

(14) One should not have a door just opposite the door of another's house or opposite to a tree, a corner, a pillar, a lane or road, a stand or a well. The window also must not be opposite to a window of another's house.

(15) Where the roof of a house is tiled, it should be high in the middle to extent of half of the span, so that the rain water may go down easily. The roof should not be leaky, low or weak, so also the terrace or the floor of the house.

(16) The height of the wall of a room is to be at least one-fifth more than its breadth (visthara) and the total width of the supporting walls of the room should be one-sixth of the breadth (visthāra). This is the measure for a house of one-floor, for houses of more than one floor, the measure will rise accordingly.

The above enumerated few standards of roads and buildings indicate the care exercised in the ancient times in the planning of roads and the construction of buildings and the great regard taken for the maintenance of a high standard of hygienic perfection, for the comforts and conveniences of life, and for the development of the villages, town or city beautiful.

Conclusion

The brief descriptions given by me of the planning of the villages, towns and cities, roads and buildings, are sufficient evidences to show that the people of India were not meta-physical philosophers solely but knew the value of life and established definite principles and rules pointing the way how to enjoy it and make it worth living and that they were materially not less highly advanced than spiritually. Mr. H. V. Lanchester (in his book—"Town Planning in Madras") has made the following observations—"The old traditions of cleanly living, and the old standards of sanitation, only need bringing into relationship with the altered conditions of modern life to achieve here (in Town Planning) a remarkable transformation. Again, in building there exists plenty of guiding principles which merely need a little adaptation."

Description of Typical Cities of Ancient India.

I shall quote a few extracts from the description of certain typical cities of ancient India given in the Epics in the literary works, and in the accounts of certain foreign travellers, because they will help us in forming a proper conception of the art of Town Planning in its practical working and in finding in them first hand materials to judge and compare for the readers.

(1). Ayodyapuree.

(The ancient capital of India somewhere about 8000 B. C). This has been described in Ramáyana as a city of 12 yojanás (nearly 108 miles) long, 3 yoganás (27 miles) broad. (1 yogana is equal to 16,000 yards). It was laid out on a fairly plain country. It was provided with many fine wide roads and streets, all symmetrically arranged; their level varied to suit the ground and to facilitate the circulation of traffic. It had also a fine lay out of 'veethies' and 'márgás,' (streets and minor roads), had stout arched entrance gates with huge doors, was equipped with mechanical contrivances and protective weapons, and wore a resplendent appearance. Surrounding the city were girdles of Sála trees. A deep water most encircling the city made it difficult of access to enemies. The roads and streets were regularly watered and occasionally strewn with full bloomed flowers (probably. it is meant here, that on either side of the streets and roads there were planted flowering trees or there existed roadside greens with flower garden beds). The king Dasaratha made large extensions of the city in order to relieve congestion. Many skilled warriors, charioteers, artisans and craftsmen lived in the city. Multitudes of lofty castles, countless flags waving gaily, hundreds of guns (sathaghni), numerous gardens and mango groves, enhanced its beauty and magnificence. There were numerous

towering places of the best stone or marble and sport houses for the ladies. The houses were arranged in an orderly manner and there was no plot of land without human dwellings. There were many seven storeyed buildings. The facades of all the houses, owing to a harmony in their design and symmetry in their arrangement, were beautiful and magnificent to behold. There were in the city innumerable horses, elephants, camels, cows and other domestic animals. The water supply of the city was limpid, pure and sweet to the taste. There were many town halls and squares in the city. In all quarters of the city were special recreational buildings and theatres for females. 'Females' parks too were not wanting.

(2). *Hastinapuri*.

(The capital of the Kuroos, about 3000 B. C.) Sri Vyása in his Mahábhárata says. "The whole city was like the wide ocean, full of hundreds of palaces and mansions possessing gates and arches and looking like large clouds in the sky. The people sported in great delight in the rivers, lakes, tanks, beautiful groves and woods. None was there miserly, and there was no woman who was a widow in that delightful city. The wells were full of water, the groves abounded with trees, the houses of the people exhibited their wealthy circumstances and the whole city was full of prosperity. The city was full of increased population and people came from other provinces".

For the purpose of water-sport an extraordinary and beautiful building was built, with many rooms filled with all sorts of luxuries, decorated with hangings and with banners flying from its top. It was situated in the midst of gardens and woods. Its windows were very graceful and its artificial water fountains were splendid. The architects and builders had handsomely plastered the walls and ceilings, and the painters had painted them beautifully. There were beautiful

tanks of pure water in which blossomed thousands of lotuses. Their banks were decorated with variegated flower beds filling the atmosphere with fragrance and the grounds all-over covered with the season flowers.

"To test the proficiency of warriors, an auditorium was built under the direction of Dronacharya. A large piece of ground was measured which was devoid of trees and thickets and which was furnished with wells and springs. The artisans were ordered to build on it a great auditorium one for men and another for ladies according to prescribed form. For the citizens were built many platforms, many spacious and high *sibikás* (balconies or turrets) around a large arena."

(3). *Indraprastha.*

(The city of *pándavás*) "A sacred and auspicious locality was selected and a sufficient piece of land was measured out to found a city. That foremost of cities when it was built looked resplendent like the city of *Bhogavati* of the *Nagás*. It was adorned with mansions, towers and turrets having windows like the outstretched wings of *Garuda*. It was provided with gates and *gopurás* (towers) looking like the clouds rising as high as the *Mandará* Mountain. They were so well built that weapons of the enemy could not make any impression on them. They were provided with all machineries of warfare..... The streets and roads were all wide and excellently laid out. Adorned with innumerable white mansions and houses, the city looked like *Amarávati* (the celestial city of *Indra*). It looked like a mass of clouds charged with lightning and therefore it was called *Indraprastha*.....—Numerous merchants who came from every direction with the desire of earning wealth resided in the city. Around the city were laid out charming gardens with *amras*, *asokás*, *kadambas*, *champakas*, *punnagás*, *panasás*, *salás*, *vukulás* and

450 Aayurveda Siksha- Historical Background. [V. 1. Ch. 7

other kinds of trees. They were all beautiful and blossoming and they bent down with the weight of their fruits. The amalakas, lodras, blossoming ankolas, párijatás and various other trees—all adorned with flowers and fruits and thronged with birds of various kinds. These verdent groves were resounded with the notes of the maddened peacocks and kokilás. There were various pleasure and sporting-houses, bright as mirrors, and innumerable bowers of creepers, charming artificial hillocks, many lakes full to the brim with crystal water and many tanks fragrant with lotuses and lillies, and adorned with swans, bucks and chakravakás. There were also many other tanks overgrown with fine aquatic plants and various large and beautiful ponds. The whole city was full of happy and healthy people and were adorned with traders and merchants. There were separate facilities for sporting in the woods, in the waters and within houses."

(4) *pataliputra.*

The capital of the Maurya Empire (3rd century B. C.) Megasthenes informs us.—"The greatest city in India is that which is called Pálimbothra.....This city stretched in the inhabited quarters to an extreme length on each side of 80 stadia (nearly 10 miles), and its breadth was 15 stadia (nearly 2 miles), and a moat encompassed it all round, 600 feet in breadth and 45 feet in depth and the fort wall was crowned with 570 towers and 64 gates." There were smaller entrances between the main gates and there were practically three brick-lined moats in succession. The walls of the capital were made of timber. The royal palace occupied a central position and was placed in a fine wooded park laid out with fountains and fish ponds".

(5) *Takshasila.*

Takshasila is a pre-historic city on the banks of the Haro, one of the tributaries to the Indus. It is situated in a

fertile valley near the foot of the Himalayas. it is the oldest city as far as our knowledge goes in the history of the world. It was known to Europeans as Taxilla at the time of Alexander's invasion. It is the place where Janamejaya performed the famous Sarpa Yagam. Recent historians are of opinion that the Sarpayaga has a historical basis in the extirpation of the Nagas, a race of people who killed Janamejaya's father.

It is now represented by more than 12 square miles of ruins, 20 miles to the north-west of Rawalpindi. It was the biggest city the world had ever seen in those times. There is now a small railway station named Taxilla at the site of the Ruins. It was a very wealthy city as it was at the meeting place of the trade routes between India and China on the one side and Afghanistan, Persia, and Europe on the other. Through it passed the grand trunk road leading from the Khyber Pass to Pataliputra, the capital of the Magadha Empire, and also the roads to the Deccan. Rich India is only on the northern side of Delhi. It has thousands of miles of black alluvial soil. The gold of India is there in the vast fields of wheat and barley.

"Taxilla was in those days one of the greatest cities of the east and was famous as the principal seat of Hindu learning in Northern India, to which scholars of all classes flocked for instruction, especially in the medical sciences." "Many foreign students from Rome, Greece, China etc., came there attracted by the fame of the University and the prestige they could win by using its name in their own country".

Glass Industry in India.

It was also a great industrial centre. You will be astonished to hear about the glass industry which existed there in those days.

Sir John Marshall, C. I. E. M. A.; writes in his "Guide to Taxilla," as follows:—"In another of the Chambers F. I. was a floor of glass tiles of bright azure blue with a few other colours black, white and yellow-mixed with them. These tiles average 10½ inch square by 1-1/8 inch thick and are of transparent glass, the first complete specimens of their kind which have yet to come to light to India." Again Sir John Marshall writes "In connection with these tiles' it is interesting to recall the Chinese tradition that glass-making was introduced into China from Northern India. Probably the whole procession path at one time paved with these stones. After learning this, we need not have any doubt about the reality of the wonderful palace built by Maya. It was so constructed with the aid of glass tiles that one was deluded to observe the presence of water where there was no water and vice versa. This glass industry as you can very well see now was one of the causes of the great *Mahabharata War*. This also shows the richness of the country and the industrial activity of the people in those times. If medicine flourished in those days, glass industry also flourished and so also every art. Lack of patronage at the present day is the cause of the decay of all fine arts and industries in India. One of these azure blue glass tiles is now exhibited in the Patna museum and many of these tiles may be found in the London museum.

(6) Ellora.

Ellora is an example of Bhudurgam. In reality, the caves found there are palaces. There are about 40 of these buildings some of them huge halls, some of them temples, and each looks like an *Indrabhavan*. In every place, even in the nooks and corners, you have beautiful breeze. They purposely made some of the passages in the hills so as to attract all the breeze and light. The huge halls accommodate thousands of

people. At the entrance of each temple or hall there is an extraordinary well or an excavation in the rock, where plenty of clear, cool, crystal water is available in all seasons. These reservoirs are very deep; you have to go half a mile up the surrounding area to reach these buildings and at that height you have got these wonderful reservoirs of water. If you want to know something about sanitary engineering, you should visit this place and get an idea of the ventilation, drainage and water supply.

"The chief building called the Kilas" Mr. Fergusson, an authority on architecture, says, "is the most wonderful and interesting monument of architectural art in India. Its beauty and singularity always excited the astonishment of travellers. This wonderful structure measures 138 ft. in length 150 ft. in breadth, the height in some place, being 100 feet. All these temples have been built by Raja Edu as a thanks offering for a cure effected by the waters of a spring near the place."

Mahabalipuram.

Mahabalipuram is a pre-historic city on the East coast, south of Madras. The temples and other architectural and sculptural constructions in Jáva and other islands of the Eastern Archipelago are built upon the model of these temples. These are known as the carts of Pándavas. They are constructed on rocks surrounded by the sea on all sides. We may take the Town as an example of Jaladurgam.

"The antiquities of this place may be divided into three groups:— (1) the five raths, which form one of the most interesting groups of monuments (2) the 14 or 15 Rishi cave temples, Monolithic figures, carvings and sculptures, which contain some marvellous reliefs, ranking with those of Ellora and Elephanta (3) the temples of Vishnu and Siva.

Mr. Corle writes:—"The best of its class is the pastoral group in the Krishna Mantapam. It represents Indra, the God of the sky, supporting the clouds with his left-hand, to protect the cattle of Bala Rája from the fury of the Maruts or tempest demons. Near him the cattle are being tended and milked. To the right, a young bull is seen with head slightly turned and fore-feet extended as if suddenly startled. *This is one of the most spirited among life like pieces of sculpture to be seen anywhere.* A little to the north of this is "Arjuná's Penance". It covers a mass of rock 96 feet in length and 43 feet in height and is described by Mr. Forgusson as "the most remarkable thing of its class in India."

8. Vijianagara.

The Portuguese and Italian travellers who visited the kingdom of Vijianagara in the early twenties of the 15th and 16th centuries A. D. have left detailed accounts of its capital. From the stand-point of Town Planning and Town expansion, the graphic description of the city of Vijianagara, as left by them in their books of travels indicates that it was laid out according to the canons of the Silpa Sástras. From the description of the city by Nicolo, an Italian traveller who visited it in 1420—21, we learn that the circumference of the city was 60 miles. Domingo Paez, a Portuguese traveller (1520—22) had given a detailed description of the city in the following wards:—"Before you arrive at the city gates, there is a gate with a wall that encloses all the other enclosures of the city. This wall has a moat of water in some places and in parts where it was constructed on low ground ... From this first circuit until you enter the city, there is a great distance, in which are fields in which they sow rice and many gardens and much water, which water comes from two lakes. Here and there are orchards and little groves of plams and many houses. The wall is very strong all of stone work, and it makes a bend

before you arrive at the gate at the entrance of the gate are two towers, one on each side, which makes it very strong. It is large and beautiful. As soon as you pass inside, there are two little temples; one has an enclosing wall with many trees, while the whole of the other consists of buildings; and this wall of the first gate encircles the whole of the city. Then going forward you have another gate with another line of wall and it also encircles the city inside the first, and from here to the King's Palace are all streets and rows of houses very beautiful, and houses of captains and other rich and honourable men; you will see rows of houses with many figures and decoration pleasing to look at. Going along the principal street, you have one of the chief gate-ways which issues from a great open space in front of the King's Palace; opposite, there is another which passes along to the other side of the city, and cross this open space pass all the carts and conveyances carrying store and everything else; and because it is in the middle of the city it cannot but be useful."

"The palace of the King is surrounded by a very strong wall like some of the others, and enclosing a greater space than all castles of Lisbon.....Going forward you have a broad and beautiful street, full of rows of fine houses and streets of the sort I have described and it is to be understood that the houses belong to the men rich enough to afford such. In this street live many merchants, and there you find all sorts of rubies and diamonds and emeralds, and pearls, and seed pearls, and cloths and every other sort of thing, there is on earth and that you may wish to buy.....Passing another gate you have another street where there are many craftsmen, and they sell many things. There are temples in every street, for these appertain to institutions like the confraternities, you know of in our parts, of all the craftsmen and merchants; but the principal and greatest pagodas are outside the city.....

There are many groves within the city, in the gardens of the houses, and many conduits of water which flow into the midst of it, and in places there are lakes, and the King has close to his Palace a palm grove and other rich bearing fruit trees. There is a little river and adjacent to it are many orchards and gardens with many fruit trees, for the most part mangoes and areca-palms and jack-trees, growing so closely one to another that it appears like a thick forest; and there are also white grapes. All the water which is in the city comes from the two lakes outside the first enclosing walls".

"This is the best provided city in the world, and is stocked with provisions such as, rice, wheat, grains, Indian corn and a certain amount of barley and beans, moog, pulses, horsegram and many other seeds which grow in this country which are the food of the people and there is a large store of these and they are very cheap. The streets and markets are full of laden oxen without count, so that you cannot go along for them.

All our historical records, puranás, and literature generally abound with similar descriptions of capital cities of India and of its Purees, Nagarás, Pattana ns, Purams and Gramams according to their status and position with due relation to the general organisation of the country and the constitution of the kingdom of India. I venture to think that the villages towns and cities in India were only planned and developed in accordance with the Aaryan traditions of Town Planning preserved in the Silpa Sastras and handed down from generation to generation, until even the XVIth and XVIIth centuries A. D. Subsequently, in the XVIIIth and XIXth centuries, owing to various causes the village, towns and cities came to lose their original significance and character. The consequence is that villages, towns and cities have been allowed to grow and develop without any principles of town planning and to

expand beyond their old boundaries without any plan or proper direct on. Thus, outside the survival of old religion and old state or Governmental control respectively, the villages, towns and cities have lost their original systems, unity of purpose and order, and descended towards a congested slumdom, which is now so largely affecting them.

IV

Good Sources of Water.

The question of selecting a ground endowed with good sources of water is also very important. Sastras classify water under three heads:—well water from springs, river water and tank water from rains (which go by the names of paataala ganga, bhooloka ganga, and akasa ganga). The Padartha Chintamani says that the water of wells or natural springs in the sandy beds of rivers, is the most wholesome of all. Varahamihran says:—Just in the same way as there are arteries for the circulation of blood in human bodies, there are water courses running in all directions above and below with in the earth; there are eight currents bearing the same name as those of the eight dicpaties (ashtadicpalakas) and there is a large current in the centre known Mahasira; besides these there are hundreds of well-known minor currents bearing distinct names. Spring water is always transparent and good. River water requires no special mention. Every river in this country is sacred and its water regarded as efficacious in producing health in giving long life and prosperity and in washing away sins. It ranks, however, in Padhartha Chintamani next after spring and river bed water in purity. The water of mountain streams is considered heating while that of forest and jungle streams cooling. Tank water is generally muddy and contains organic and inorganic impurities, the kind and amount of which depends on the sanitary state and

nature of the gathering grounds. Tank water is according to Padārtha Chintāmani the most impure of all nevertheless it is sweet. There is a Tamil saying referring to the regard to be paid to water—"Thanneereyum thāyaiyum pazhikkhalāmá". May one abuse water or one's other. The nearness of a river to a town adds also grace and beauty to the town. "Aarillā Oorukku azhagu pázh".

Shape of Ground.

The shape of ground or human habitations is another important matter on which various sastras deal with elaborately. Mayamata recommends five shapes of ground for human habitations: (1) square (chaturasra), (2) rectangular or oblong (aayatasra), (3) roughly circular (vritta), (4) elliptical (cvritta-yata), and (5) completely circular (golavritta). Agni purana condemns a ground which resembles "vajra soochi" in shape (diamond shaped, octogonal) as inauspicious. All authorities praise rectangular and square shaped grounds for laying out human habitations. Rectangular shaped ground makes for permanence, peace and prosperity; while a square ground yields to the people all the four purusharthas, Dharma, Artha, Kama and Moksha. Triangular shaped grounds and even circular ones are not quite good as they are supposed to become hot beds of many endemics and pestilences. Kalika Purana says that a drum shaped ground annihilates the people as Lanka (capital of Ravana), being drum shaped was destroyed and left in debris. Fan shaped ground is not also auspicious as the king Vali whose capital Santipuri which was fan shaped was forsaken by fortune. The pentagonal shaped ground is not also good for the king Salva's capital which was on pentagonal ground came to be completely destroyed. The circular, triangular, multiangular, or any irregular ground contours were denounced, because such shapes would erect

upon the proper planning of sites for buildings and their orientation.

* The shape of the land (surface shape) on which buildings are to be constructed should be examined. Here is a description of 16 shapes of land, good, bad and indifferent, mentioned in the chapter relating to the selection of sites for the construction of houses.

1. Vrittam	(Square)	Good
2. Samastitham	(Equal breadth)	do
3. Aayatam	(do . length)	do
4. Bhadrasanam	(Vartula-circular)	do
5. Vishama Chaturasram	(Unequal sides and angles)	Not good.
6. Chakravakram	(Wavy)	do
7. Vishamabhúmi	(Irregular)	do
8. Trikonákáram	(Triangular)	do
9. Saktakaaram	(Conical)	do
10. Dandakaram	(Elongated)	do
11. Súrpaakaram	(Winnower shaped)	do
12. Kurmakaram	(Tortoise do)	do
13. Dhanurakaram	(Bow do)	do
14. Kumbhakaram	(Pot do)	do
15. Pavanatmakam	(Hollow-Cavernous)	do
16. Murajakaram	(Drum shaped)	do

(Vastu Ratnavali, Telugu, Page 13)

Only the first four are good for erection of buildings. The others have been mentioned to be condemned.

First Lay out Plan of Town, then of a House.

Having determined the ground or site in the light of the various principles mentioned so far, the planning of a village or town or city has to be determined. Viswakarma Prakasika says : "First lay out the village, town or city and

then only plan the houses. Violation of this rule portends and brings evil." All the Vastu and Silpa Sastras lay stress upon the importance and necessity of planning a village, town or city as a whole and of every land within the site selected for it in advance of building operations. They insist upon the laying out of a village, town or city in an orderly, systematic manner, fixing its boundaries, its shape, its forts moats and ramparts, its roads and streets, the division into wards, blocks and allotments, reservation of places for communal and other general public purposes, the distribution of plots for dwelling houses and other buildings, and all other matters concerned with the planning of the whole village, town or city, consistent with the social, agricultural, industrial, commercial, administrative and political needs and conveniences. The Śāstras enjoin that there should be conscious planning at every stage of the growth of the village town or city, from the very foundation, and that proper care and foresight should be exercised in its development, improvement and expansion from time to time on orderly lines. The Śāstras warn also that an unconscious growth of houses and buildings without settling their proper location, and arrangement, leaving insufficient space for streets and roads and other civic factors and upsetting the arrangement of social and religious systems, will be detrimental to the interests of the general community and of the individual citizen and will seriously interfere with the convenience, healthy living conditions, amenity and prosperity of the inhabitants.

The planning of villages, towns and cities may be said to arise in connection with life as an expression of its aims functions and general achievement. Life may assume various functions, may have different courses. With different individuals and communities, it is directed, organised and regulated, having definite tendencies and, then, it is called a planned

system of life. In Town Planning which settles the arrangement and development of villages, towns and cities suitable for particular functions or courses of life adopted by the communities, life becomes systematised and more explicitly conscious of its tendencies and is able to make steady progress and functions efficiently and properly. Town Planning becomes also a means of justification and maintenance of one system of life in conjunction to other systems and thereby lays the foundation for the organised country planning or national planning. The policy and principles of town planning will be determined by the different systems of life pursued or adopted by the communities. In other words, from particular systems of life, definite problems and methods of town planning arise.

**Allocation of the Country into units and Establishment of villages, towns and cities.*

The systems of life represented by the systems of Town Planning adopted in ancient India, are four, viz.—

- (i) Industrial (including both agricultural and Industrial), represented by the system of Village Industrial Town Planning.
- (ii) Commercial, represented by the system of Commercial Town Planning.
- (iii) Administrative, represented by the system of Civil and Military Town Planning, and
- (iv) Social and Religious, represented by the Capital or Metropolitan City Planning.

Life as experienced in India has been a process or growth almost functional and this growth under a planned country system remained within the bounds of the particular village, town or city system by which at an early stage it expressed itself, and according to which it has strived to

fashion itself. It has determined for itself both a planned system of functional operations and an appropriately planned place of work and habitation.

In the planning of the Country as a whole five units of division have been adopted. The agricultural unit or "grāma" comprises that piece of land whose area is a 'crosa'—2,000 yards square according to Manu, or 2,500 yards square according to Prajāpathi. The industrial unit has jurisdiction over 10 grāmas or villages. The commercial unit has jurisdiction over 10 industrial divisions or 100 grāmas or villages. The administrative unit has jurisdiction over 10 commercial divisions or 100 industrial divisions or 1,000 grāmas or villages. The social or political unit has jurisdiction over 10 administrative divisions, or 100 commercial divisions, 1,000 industrial divisions, or 10,000 grāmas or villages. These different jurisdictions have been designated as Grāma, Nad, Oor, Rājadhani and Desa (which are equivalent to Village, Circle, Taluka, District and Province) and their centres or head-quarters have been named grāma (proper), Puram, Pattanam, Nagaram and Puri. Thus, according to the Desa (political) system of planning, a capital or metropolitan city (Puri) has been founded for every 20,000 square miles (roughly of the Country, a corporated administrative town or city (Nagar) for every 2000 square miles, a commercial emporium or town (Pattana) for every 200 square miles and industrial town for every 20 square miles, and an agricultural village (grāma) for every 2 square miles.

Under this system, the whole of India has been divided into 56 Desas or Political Divisions (Provinces). See Historical Background.

Systems of Ancient Town Planning.

According to the extent and nature of jurisdiction, the

Town Planning] Systems of Ancient town planning 463

system of life and functional operations, the different centres of work and habitation of the various communities in India, going by the names of grāmam, puram pattanam, nagaram and puri, have to be laid out and planned. Their planning has to be based on those particular geometrical patterns considered auspicious and convenient and suitable for the type of village, town or city to be laid out. About 15 systems of planning have been recommended in the Silpa Sástras. They are:—

- | | | |
|---------------|------------------|----------------------|
| 1. Dandakam, | 2. Sarvatobadram | 3. Nandyávartam, |
| 4. Padmakam, | 5. Swastikam, | 6. Prastárnam, |
| 7. Kármukam. | 8. Chaturmukam, | 9. Prakeernakam, |
| 10. Parágam, | 11. Sampatkáram, | 12. Sripratishátitam |
| 13. Kumbakam. | 14. Srivatsam, | 15. Veidikam. |

These systems of planning are named after the shape a village, town or city is to take, the method of laying out or orientation of main roads and streets, the manner of subdividing of blocks and wards and the arrangement of houses and buildings. In all these systems, the alignment of main roads and streets are generally required to be made north to south and east to west—that is to say, the rectangular pattern of development is the usual method prescribed. The radial or diagonal arrangement of streets as well also circumferential or annular arrangements, may be followed in the cases of villages, towns or cities, which have a circular, semicircular hexagonal or octagonal shape, and which follow those systems going by the names of Nandyauvartam (like the section of a chunk shell with clockwise or anticlock-wise convolutions), Padmakam (circular and segmentate, like the petals of the lotus), Kármukam (semi-circular or semi-elliptical, like a bow) Prakeernakam (fan-shaped), Parágam (like a cob-web), and Kumbakam (circular or polygonal).

The Silpa Sástras and other treatises on Indian Town

Planning make a special treatment of the planning of villages in accordance with the various systems just mentioned, and the civic architect or town planner who goes by name of 'Sthapati' is advised to utilise and adapt the self-same principles of village planning in the cases of also industrial towns (purams), commercial towns (pattanams), administrative towns and cities (nagarams), and capital cities of provinces or desams (purees), but on a larger and an elaborate scale, with necessary modifications and with due regard to the systems of life and functional operations industrial, commercial, etc.) of the communities for whom they are designed.

The different systems of Town Planning laid down in the Sástras and already mentioned, are further based upon 32 schemes of division distinguished by different names according to the number of squares or blocks into which the whole village, town or city area is marked off by the principal main road (rajamargás). The scheme of division is arranged in such a manner that in each case the number of block correspond to the square of serial numbers from 1 to 32. The division of a village, town or city will thus vary from 1 to 1,024 blocks—in accordance with its area, structural requirements and number of dwelling houses. The smallest gráma will have at least four blocks separated by a main road running from north to south and another road from east to west. Single block villages or hamlets with a few houses and perhaps a small temple, are not usually named gramams. They go by the names of palli and 'kumbha'. The measurement of a 'palli' is half that of a 'palli grama' and a 'kumbha' half of a 'palli'. In the case of towns—pattanams and small nagarams their division into 7, 8 and 9 parts in each direction, that is to say, division into the squares of these numbers, viz., 49, 64 and 81 blocks is commonly adopted. The divisioning into larger number of

blocks arrived at by the squares of the numbers from 10 to 32, is adopted in the cases of larger towns and cities (large nagarams and purees). The commonly known systems of dividing towns (pattanam) and small nagarams into 49, 64 and 81 blocks are named Sthandila, Chantdita and Paramasáyika.

The general outline of the villages, towns and cities may be square, oblong, circular, semi-circular, hexagonal, octagonal, etc. According to Sukra-neeti-sástra a village, town or city should have the beautiful shape of a half-moon or a circle or a square and must be big enough to contain a number of wards and divisions. The extent of the village proper has to be about one-twentieth of the whole village-ship. The same proportion will hold good in the case of towns and cities with reference to the respective town-ships and city-ships. Thus according to the principal types of villages, towns and cities, the extents may be mentioned as—

- (i) Grámam—agricultrial village—1/10th of a square mile or 560 yards square;
- (ii) Puram—industrial town—1 square mile or 1,760 yards square;
- (iii) Pattanam—commercial town—10 square miles or 5,600 yards square.
- (iv) Nagaram—administrative town or headquarters of a Rájadháni—100 square miles or 17,600 yards square.
- (v) Puri—metropolitan city or capital of a province or desam—1,000 square miles or 56,000 yards square.

The dimensions of the villages, towns and cities will depend upon the shape of their formation and local and

environmental conditions. If they are oblong or elliptical, their lengths may be twice, thrice or four times their breadths.

According to the general constitution of ancient India into grāmams, purams pattanams, nagarams and purés, it may be estimated that there were: 560,000 grāmams—agricultural villages, 56,000 purams—industrial towns, 5,600 pattanams—commercial towns, 560 nagarams administrative towns and cities, and 56 purees—capital cities of desas or provinces (see page 66). It may be also observed that a grāmam provided accommodation for about 100 families or 400 people a puram—500 families, or 2,000 people; a pattanam—2,500 families or 10,000 people, a nagaram—12,500 families or 50,000 people; a puree—62,500 families or 2,50,000 people.

The distribution of population for the whole of India based on the above calculation may be said to be as follows.—

Grāmams—Purely agricultural	...	224,000,000
Purams—Industrial and artisan	...	112,000,000
Pattanams—commercial and trade	...	56,000,000
Nagarams—administrative etc.	...	28,000,000
Purees—religious, etc.	...	14,000,000
Total	...	<u>434,000,000</u>

Characteristics of a Village and the distinction between Village and Town or City.

Mr. E. B. Havell (in his book—“Ancient and Mediæval Architecture”) has observed—“The most advanced science of Europe has not yet improved upon the principle of the planning of garden cities of India based upon the Indian village plan as a unit.” In India, garden village, in its wider sense,

is the centre of civilisation. A village is a natural centre of an agricultural unit under the socio-political division of India, and has a natural growth. It is a self contained settlement of peasantry, located in the centre of cultivable land. It is a self contained settlement of comfortable size—neither too large nor too small, but, large enough to contain every thing that the Sástras prescribed that a village shall be provided with, and to engage people who live there, in right and proper enjoyments and in its good government. It is a settlement which secures for the agricultural community living in it, "healthy, natural and economic conditions of life". It is industrial to the point of producing its due share of commodities; it is urban to the point of possessing residential amenities of no mean order and accommodating a reasonable number of agriculturists and few traders and others, to live healthily and conveniently in confined areas. It is indeed, a civilised settlement and a pleasant place to live in, planned from the beginning, so that the most appropriate environment was available for both workers and works. In fact, the term 'gráma' conveys the idea of a village well balanced, and smoothly working organism of life and labour, being located on such a site in such a locality, under such environments, and so planned, that agricultural industry can be carried on in the most efficient and economical way possible.

By living in villages, the community who operated in the animal and vegetable kingdoms is enabled to devote themselves exclusively to their works as tenders of cattle and tillers of the soil and partly as traders. It can enjoy perfect happiness, health and contentment. The question of growing population does not require such complex solution in India as it is now found in the industrial countries of the west, because as population increases attempts can be taken to plan fresh areas

suitable for cultivation and habitation, and so under a planned system of agricultural development, it will be quite an easy matter, to protect them and to maintain them, and produce sufficient food for them all, and additional villages can be formed for their habitation very economically.

The agricultural mode of life is superior to all modes of life. The reknown saint Tiruvalluvár in his Kural alludes to this same fact thus—"The one that lives by tilling the soil is the one that lives a real life, for, all others are his humble servants that depend upon him for their sustenance". The Indian scriptures also—"Agriculture and trade supply all men with the means of subsistence. These and similar other acts shall be pursued by many persons in such a way that they may not suffer injury. If persons engaged in such pursuits suffer or feel a sense of insecurity, the kingdom incurs loss and will eventually decay. It is they who bear the burden of the kingdom, and support the other people". So much so, even the works on Indian Town Planning—the Silpa and Vastu Sastras make separate treatment of, or make it a primary duty of the State—the planning or layout of villages. The very fact that the systems of planning laid down in the Silpa Sastras refer mainly to villages, must show that the villages have been primary concern of the authorities who held charge of them, and their planning and upkeep have been receiving very great consideration and attention.

In the Artha Sastra of Kautilya it is laid down as follows—

"Villages consisting each of not less than a hundred families and not more than five hundred families of agricultural people, with the boundaries (including the land under cultivation and comprising the whole village-ship) extending as far as a Kros (average 2,250 yards square) or two and capable of

assisting each other shall be formed. Boundaries shall be denoted by a river, a mountain, forests, artificial boundary walls or fences, or by rows of trees such as 'salmali' (silk cotton trees) 'sami' (acacia suma), and 'ksheera' vriksha (milky trees)".

It is also pointed out that villages shall be established throught the kingdom for the sake of administrative efficiency and prosperity, and that "either by including people of other provinces or desas to immigrate or by causing the excessive population from the over crowded and thickly populated centres to be transferred, villages may be constructed either on new sites or on old sites".

The salient features of a simple type of a village according to the science of Indian Town Planning are:—

Each village should have at least two main large roads, one running north to south and another running east to west and a large boulevard road running all round the village. The main north to south and east to west roads should intersect each other at the centre of the village, where a temple or a public hall surrounded by garden should generally be built. Each of the four blocks into which the village is divided by the main roads, should be further subdivided into small blocks by streets which should be straight and run from one end to the other of each main blocks joining with the central main roads and the outer boulevard. The two main roads crossing at the centre should have houses on both sides or shops only on one side, facing the road. The buildings on these main roads should be at least two storeys high. The surrounding boulevard may have houses on one side. All the other streets should be occupied by detached residential buildings on both sides. The houses of all classes of people should have uniform or harmonious designs with

good outward appearance, and their height should correspond in every street as far as practicable, and all buildings in a street should have the same number of storeys. The village should be provided with all the necessary public buildings, such as a school, library, guest-house, club, choultry, museum, theatre, etc, along the boulevard. Tanks and wells should be provided in all the inhabited parts and located in each quarters as can conveniently be reached by the inhabitants of the various blocks. Temples of public worship as well as the public commons, gardens, parks and recreation grounds should be similarly situated. The drains should be made to run towards the sloping side of the village. Each village should have a broad belt of land surrounding it occupied by trees, gardens and woods and common pasture grounds for cattle and also an encircling wall furnished with gates on all the four sides and a brick-lined moat or an artificial channel connected with any river or filed with perennial water or with water drawn from some other source".

The planning of the towns and cities also should be on the same lines and principles of garden village planning, and on a large scale and with necessary additional conveniences and amenities. The difference between a village and a town or city is that while the latter is somewhat an artificial development the former is a natural and fundamental unit under the ancient planning of a kingdom. In a village, nature directly plays an important role and it may be said to be one complete garden interspersed with human habitations; whereas in a town or city which focuses and embodies the industrial, commercial, administrative and socio-political life of people, certain artificial considerations are also brought in and it has to be planned not merely as garden village but also with due regard to industrial, commercial, and other considerations. In general principle, however, the purams, pattanams, nagarams

and purees are planned on the garden village ideal. The puram is a garden town in the midst of its satellite garden villages, planned specially for industrial development, besides being a mother village and a central place of administration of 10 villages. The pattanam is a garden town in the midst of its satellite garden industrial towns and garden villages, planned specially for the development of large scale trade and of commerce with distant places besides being a mother industrial town and a central place of administration of 10 industrial townships or 100 villages. The nagaram is a garden city in the midst of its satellite garden commercial towns, garden industrial towns and garden villages, planned specially for the civil and military administration besides being a mother commercial town and a control place of administration of 10 commercial town-ships, or 100 industrial town ships, or 1,000 villages. Similarly the puri is a garden capital city of the whole desa or province, planned specially for the general, social, religious, educational and political advancement, besides being the mother administrative city and the chief centre of administration of 10 administrative city-ships, or 100 commercial town-ships, or 1,000 industrial town-ships, or 10,000 villages.

**Classification of Towns From Military Considerations.*

Towns are divided primarily into 3 classes (Vastu Ratnavali, page 37) from the locality selected for the construction of a fort:—

Bhú Durga (Underground fort).

Jala Durga (Water fort)

Adri Durga (Hill fort).

**Chief Objects of Town Planning.*

Conclusion.—I shall conclude this chapter with the following observations,—If there had been in the past any first attempt that has been successful in the planning of towns and cities on the basis of the village unit and on the garden village ideal as well as in the communal ideal, it is to be found in India. I may even go to the extent of saying that India has been foremost to adopt these ideals to perfection. The chief objects among others, aimed at by the town Planning system adopted in ancient times in India are:—

- (1) To establish and plan in an ideal way five centres of occupation, viz, the agricultural centre, the industrial centre, the commercial centre, the administrative centre, the political, religious and social centre.
- (2) To provide homes for the different classes of people with due regard to their social customs and status in life, and proximity to place of work or engagement.
- (3) To reserve sites for houses free of cost and without power to sell away the same, that is, if the land is not required or used up by any body, it may be transferred or allotted by the State without having to pay anything for the land.
- (4) To secure all the conveniences for domestic living for all the communities alike to provide properly maintained gardens, groves and selected trees within the city at selected places and there by creating healthy, beautiful and serene conditions.

- (5) To maintain communal life and consciousness in the allotment of places for public squares, public bathing places, rest houses and other communal needs, and in locating in seclusive places, communal burning and burial ghats and bathing places, slaughter houses etc.
- (6) Generally a villages, town or city as a whole is conceived with reference to some definite system or orderly development, and land laid out for different purposes such as, residential, roads, streets, parks, gardens, palaces, temples, tanks, play-grounds, sporting places, schools and colleges, charitable institutions, etc., and kept as public or communal property or property held or transferred in trust.

In early times, when Government was responsible for the planning and development of the villages, towns and cities. Town Planning was practised consistently with the Sastras—it may even be said to have been imposed on the people. It was not however, the outcome of the whim of an autocratic ruler or the fancy of an aristocratic or orthodox community but one largely bound up with national well-being and having as its object the development of villages towns and cities for “convenience, sanitary conditions and amenity.”

One Mr. Dutt has written a book on “Town Planning in Ancient India” in which he has skimmed from the ancient writings the references to the subject. Those of you who are sufficiently interested should have a copy of this book. From it you will see that there was an Indian Art and Science of Town Planning. If we want the development of Indian Nationality a knowledge of Ancient Indian Town Planning theory and practice would do of real assistance in

the evolution of a modern town planning system, suitable to Indian conditions; for, it must be realised that the practice of modern town planning must be made to suit local and national needs due to climate, community, custom, caste, trade, commerce, industry and agriculture, and that in this respect conditions in India are somewhat more complicated than in any other country in the world. There is, of course, a logical limit to the usefulness of experience of modern townplanning in other countries where conditions often are totally dissimilar. Though the main principles of town planning are more or less the same throughout the world, the real difficulty begins when the practical adaptation of those general principles is sought.

With the development of science, religion may not hold the same dominating place in realms which may by many be considered to be outside of its scope *i. e.* economic and material, but on the other hand it is possible that India has something to teach the world in respect to a fundamental unity between the material, and spiritual, and the permeation of every day actions with the religious atmosphere, something of value, possibly that may have been lost in the scientific materialism of the West.

Important Items in Town Planning.

I may also mention to you some of the important items required to be dealt with in the planning of villages, towns and cities in the ancient Sastras:—

- (1) Temples shall be built in every village, town and city.
- (2) Palaces and mansions shall be built in appropriate places in towns and cities, for the residence of the administrator and other chief officers.
- (3) Bungalows and dwelling houses for the several classes of people that lead a domestic mode of life shall be

built in the parts respectively assigned to each.

(4) Chutrams, matams and special resting places or homes shall be built in different parts for the people who lead the three modes of life, viz., Brahmācharin, Sanyasm and Vanaprasta modes of life.

(5) Boarding and resting houses shall be built in isolated places for travellers and pilgrims to halt and mess.

(6) Mantapams and chavadies shall be built at convenient intervals to provide shelter to people from rains and sun.

(7) Bungalows, reading rooms and clubs shall be built for the citizens to meet and converse and spend their leisure times joyfully and usefully.

(8) Public halls and places of worship, public walks and maidans, public baths, parks, gardens, athletic sports and playing grounds race grounds, open air meeting places, etc., shall be provided in convenient places.

(9) Colonies of houses and cottages for the poor and homeless people shall be built in isolated localities and near the outskirts of a village, town or city.

(10) Asrams and salas including school and college buildings, boarding and lodging homes for scholars and research students, located in the midst of large gardens with facilities for sports and playgrounds shall be provided in convenient places.

(11) Gate ways, arches, fountains, statues memorials, etc., shall be built in various parts of the village, town or city, to enhance beauty.

(12) Medical halls and dispensaries for giving medical treatment to people suffering from diseases and isolated homes for them to reside shall be built in as many places as possible.

(13) Prisons and jails for punishing the criminals and

training bad people to follow right path, shall be built in isolated places.

(14) Public cattle yards and pounds for domestic animals such as cows and sheep to rest and graze shall be provided near the outskirts of a village, town or city.

(15) Public cart stands for carts and vehicles and stable for horses and bulls shall be built at convenient intervals.

(16) Parnasálás or hermitages for saints and venerable men to live shall be built in the midst of spacious gardens and topes near the outskirts of a village town or city.

(17) Markets and shops for trade and sale shall be located in the specified quarters of a village, town or city.

(18) Manufacturies, store house of forest produce arsenals, etc, shall be located in certain specified localities so as not to be a source of danger to health or fire.

(19) Cremation and burial grounds and special tomb sites shall be provided in the specified quarters.

(20) Tank, reservoirs and wells shall be distributed all throughout.

(21) Broad streets and roads, avenues, promenades, sidewalks, special passages and lanes shall be laid out in conformity to the system of planning adopted.

(22) Special sites for weaving, dyeing, handicrafts and industries shall be provided in suitable places.

(23) Theatres, libraries and silpa sálás, (museums or halls or arts) shall also be provided.

(24) Spacious gardens and topes where fruit trees, flower plants and medicinal shrubs may be grown and birds of innumerable variety may live and sport shall be provided.

Generally the planning of a village, town or city shall provide for all matters that are conducive to the common well-being of all human, animal and vegetable lives.

****Our Places of Pilgrimage Are Health Resorts.***

"Our places of pilgrimage are really health resorts developed by our ancients with a zealous care. They realised the hygienic value of plunge baths in a country like India and spent crores of rupees in the construction of tanks near famous temples. But now such places have become breeding places of disease. When you see the waterfalls, the natural forest scenery and the pure and sweet water called Therthas, you will have to admit that almost all the beauty spots in India have been reserved as health resorts and made sacred in the name of God. If we, as degenerate Indians, have been closing them down and polluting them through ignorance, it is our own fault. When we learn the real meaning of the institutions wisely found by our ancients, we will be proud of carrying on their civilization for centuries to come and keep India's glorious banner high".

I will conclude this Chapter—by stating that a sacred and monumental work, indeed, it would be if all our villages, towns and cities were re-established in accordance with the ancient system and principles of Town Planning, and in them were found, not only apposite and sanitary habitations, humble but good dwellings with costless art, with elevating and refined taste, but also furnished with that sweet spirit of content which should cause their occupants to say:-

"Here reigns content,

And Nature's child Simplicity, long since
 Exil'd from polished realms. Here ancient modes
 And Ancient manners sway; the honest tongue
 The heart's true meaning speaks, nor masks with guile
 A double purpose; industry supplies
 The little temp'rance asks, and rosy Health
 Sits at the frugal board.



ADMINISTRATION OF PUBLIC HEALTH IN ANCIENT INDIA.

Down from the Vedas the average expectation of age of Hindus was a hundred years. It was the prayer of early Hindus to Gods that they may bestow upon them prosperous, healthy and beneficial life of over hundred years. The usual benediction 'Satham jeeva Sarado vardhamaana ityapi nigamo bhavati Sathamiti Satham deerghmaayuh' May thou live a hundred years developing with prosperity, says Veda. 'Saanthi rasti, Tustu rastu : Pushtirastu; Vriddhirastu ; Avighnamastu ; Aayushyamastu ; Aarogyamastu.

May there be peace to all ! May there be contentment to all ! May there be prosperity ! May there be growth ! May there be no impediments to your efforts ! May there be long life ! May there be health to all !

*Swasti, Prajabhyah Paripalayantam
Nyayena Margena Maheem Maheesah
Go Brahmanebhya Subhamastu nityam
Lokah Samastah Sukhino Bhavantu.*

'May there be Peace to all people ! May the king's rule this earth proceeding on the right path ! May there be always health and prosperity to cows and Brahmanas ! (Cow, here, is symbolical of prosperity and Brahmana is symbolical of

regulation of dharma and intellectual superiority). May all people be happy !'

IDEAL OF PEACE AND PROSPERITY.

This great ideal of peaceful and prosperous life was based upon the beneficent rule of the king on which depended the happiness of the people. Although the king was allpowerful, his powers in Hindustan were limited by a code of laws which he should obey as well as every citizen. The punishment imposed upon the king who went wrong was much more severe than the punishment imposed upon an ordinary citizen. Usually there used to be a number of ministers holding different portfolios and the village administration generally was of the nature of self-determination. Every village was more or less an autonomous unit whose comforts were considered foremost and who, after satisfying its own needs, helped to build up a prosperous empire, by the surplus of their produce See historical background.

ADHARMA, THE FOREMOST CAUSE OF DISEASE

Of all causes of disease, the Hindus considered Adharma (unrighteous conduct) as the foremost. In the case of the state, the unrighteous conduct of the leaders was considered to be responsible

for all ill-health. Whole villages were destroyed on account of Adharma of the leaders. Desanagara-nigama-Janapada-pradhaanaah-dharmamutkramya Adharmena Prajaam Vartayanti. Tadasrito-paasritaah Pourajanapadaah Vyavahropajeevinascha thamadharmam Abhivardhayanti...Tatah Uddhwam-sante Janapadah. While tracing the causes of epidemic diseases they observed that at the root of all evil and ill-health, lies greed which starts with slight overeating by those who happened to possess a little more than what they needed. This greed (Lobha) gradually became the cause of exploitation of the weak, personal jealousies, pride, haughtiness and quarrels amongst individuals and wars amongst states. Thus, wars were also included in epidemic diseases which also arose out of the one cause viz., Adharma. Tatha Sastrabhvasyaapi Adharma eva heturbhavati. Charaka vimana Chapter 3. 22

Whereas in the case of contagious diseases of the body, the germ of infection was the invisible microbe, the virus, in the case of wars, infects the minds of leaders and through them the contagion spreads to whole State which is thereby destroyed.

THE THREE AGENCIES.

There were three agencies through whom Dharma or righteous conduct was preached, fostered and administered in Hindusthan. The

first agency consisted of the codifiers of law such as Manu.

The second agency was the Gurukula which taught the theory and practice of the rules of health. The third agency was the magistracy in the State who punished wrong-doers severely. Arthasastra gives instances of severe punishment imposed upon those who polluted the streets. To allow drainage from the house of an individual citizen to pass into the street or into the compound of a neighbour was punishable with severe punishment. See page 42. To achieve this end, it was ordered that no house shall occupy more than one half of the vacant site on which the building stood and that a minimum space, called *veedhika* or fore-court, of 8 to 10 feet should be reserved in front of the house, this being definitely fixed at one-third of the width of the street — In this manner the refuse of each house was absorbed in the garden for the benefit of the population both from the economic, aesthetic and health-point of view. Thus the whole of Hindusthan developed into a healthy and prosperous garden-colony as villages and cities expanded. It was the ideal of ancient Hindusthan to banish poverty and disease from the country and if any disease unavoidably existed, hospitals were built throughout the country to serve both human beings and animals. The principles of

Ahimsa (nonviolence) and **Bhuutadaya** (charity to all other living beings) were so fostered that it was a crime to injure even a plant unnecessarily, although, however, the rule was, that lower organisms had always to serve for the good and well-being of the higher organism. This service was considered to be the Swadharma of the individual and the State had to see that this Swadharma was administered properly. It was the duty of the State to see that the weak were not oppressed by the strong. We give, hereunder, a few quotations regarding the conditions of civic institutions that existed in the days of prosperous Hindustan:

MUNICIPAL BOARDS

(Under Mauryan Kings)

The administration of the cities was provided for by the formation of a Municipal Commission consisting of thirty members, divided into six Boards or Committees of five members each.

The first Municipal Board was entrusted with the superintendence of everything relating to the industrial arts, and it was responsible for fixing the rates of wages and enforcing the use of pure and sound materials. Artisans were regarded as being devoted to the royal service, and capital punishment was inflicted on any person who impaired the efficiency of a craftsman by causing the loss of a hand or an eye.

The Second Board devoted its energies to the case of foreign residents and visitors. All foreigners were closely watched by officials, who provided suitable lodgings escorts and Medical attendance. Deceased strangers were decently buried and their estates were handed over to the persons entitled.

The third Board was responsible for the systematic registration of births and deaths. Even the Anglo-Indian administration with its complex organisation and European notions of the value of statistical information, did not attempt the collection of vital statistics until very recent times and always has experience of great difficulty in securing reasonable accuracy in the figures.

The fourth Board dealt with trade and commerce, regulated sales and enforced the use of duly stamped weights and measures.

The fifth Board was responsible for the supervision of manufacturers on similar lines.

The sixth Board had the duty of collecting a tithe (1/10) of the value of goods sold and evasion of this tax was punishable with death.

In addition to the special departmental duties above detailed, the Municipal Commissioners in

their collective capacity were required to control all the affairs of the city and to keep in order the markets, temples, harbours, and all public works. Vincent Smith—(Page 127, 128.)

VILLAGE ASSOCIATIONS.

(Under Chola Kings)

The details of the working of the ancient village associations or assemblies are especially interesting and prove that the Government was by no means a mere, centralised autocracy. The village assemblies possessed considerable administrative and judicial powers exercised under the supervision of the crown officials.

There were five 'great assemblies' which checked the autocracy by Tamil Kings and comprised the people, priests, astrologers, physicians and ministers.

VILLAGE, THE UNIT OF GOVERNMENT.

(Under Chola Kings) ii.

The village was the unit of Government. The Indian village or township is not merely a collection of houses, forming a village or town but a division of territory, three or four miles or more in extent, with its careful distribution of fixed occupations for the common good, with its intertwining and interdependence of individual,

family and communal interests; with its perfect provision for political independence and autonomy. is the original type - the first germ of all the divisions of rural and civic society. (Monier Williams, M.A.C.I.E. Page 455).

Modern Governments would be happier if they could command equally effective local agency (Vincent Smith Page 404). The Indian village organisation has existed almost unaltered since its first description in the code of Manu, five centuries B. C. It has survived all the religious, political and physical convulsions from which India has suffered. Invader after invader has ravaged the country with fire and sword; internal wars have carried devastation into every corner of the land, tyrannical oppressors have desolated its homesteads; famine has decimated its peasantry; superstition and delusion have made havoc of all religion-but the simple, self-contained Indian township has preserved its constitution intact, its customs, its precedents and peculiar institutions unchanged and unchangeable amid all other changes, (Monier Williams M.A.C.I.E. Page 455.)

PROVERBIAL PROSPERITY OF ANCIENT HINDUSTAN.

India can enrich you with gold and precious ores, with diamonds and precious stones with coal and iron. She can pour out before you wheat and grain of all kinds, oil and sugar and every conceivable species of vegetable and mineral produce.

Even in the days of Rama the procession that went out to meet him from the capital of Oudh included metal - workers, coppersmiths, ivory-workers, crystal-cutters, glass - makers, inlayers, umbrella - makers, perfumers, hair-dressers, fish-mongers, musical instrument-makers painters, distillers, seedsmen, gardeners, partridge dealers, basket-makers, brick - makers, plasterers, architects, clothiers, with the headmen of guilds bringing up the rear.

India can clothe you in soft vestments of silk, wool, cotton, cambric and embroidery. She can call forth your admiration by matchless examples of industrial and decorative art, of unrivalled manual skill, of consummate taste and dexterity displayed in every kind of manufacture. No one could fail to admire the exquisite carvings, the delicate filigree work, the artistic feeling displayed in the fashioning of ornaments; the gorgeous richness of the kincob work, with its gold, silver and silken threads, woven into the texture of the fabric; the tasteful designs and matchless colouring of the Cashmere and Delhi Scarfs and shawls; the marvellous skill in sandalwood carving; the sumptuous gold and silver plate work and highly tempered weapons of steel.....

History has preserved for us the glorious stories of the Buddhistic times. It is said that Asoka's empire was bigger than the British Indian

Empire of to-day and that he ruled this vast empire with the aid of four viceroys from his seat at Pataliputra by the promulgation of the benevolent principles of truth, Ahimsa and self-sacrifice which form the basis of the creed of Mahatma Gandhi.

DEVELOPMENT OF MEDICINE IN ASOKA'S TIME.

In his reign the art of medicine was highly developed as every other art.

"The time of Asoka had also seen medicine developed to a great extent. There was a State Pharmacy where medicines were prepared.

Marginal furrows between any two rows of crops were utilised for the plantation of fragrant plants, medicinal herbs and the like.

Such medicinal herbs that grow in marshy lands were grown not only in grounds suitable for them but also in pots (Sthalyam)." Page 145 Kantilya's Artha-Sastra.

Inscriptions were also laid on pillars and stupas containing rules of good conduct for the moral and physical development of the masses.

(BUILDINGS).—Hospitals In Ancient India.

The building of the hospital should be strong and not exposed to strong winds. Every part of

it should have access to plenty of air, i. e., freely ventilated, spacious enough for walking about freely with ease, not too near any high and huge buildings or obstructions, not exposed to smoke, sun, moisture, or dust, and not exposed to injurious sounds, feelings, forms, tastes and smells." Upakalpaniyam Adhyayam - Charaka. Sutrasthanam Chap. 15.

"The house should be certified by experts in Engineering, should have easy stair - cases, mortars and pestles, lavatories, bath - rooms and kitchens."

LABOUR ROOM.

"It shall have different compartments fitted with necessary furniture according to definite calculations, shall have the walls painted according to taste and shall have each compartment definitely divided off by suitable screens. It shall have eastern or southern gateways and each apartment shall measure not less than eight hastas (yards) in length and four hastas in breadth and shall be decorated with Toranams (flags and buntings) of an auspicious nature."

CHILDREN'S APARTMENTS.

"The children's apartments (Kumaragaram) should be certified to be good by expert engineers."

and they should be handsome, free from darkness, free from winds but having free breeze, strong and should have separate compartments for water, mortars, urinal, lavatory, bath-room and kitchen."

ATTENDANTS IN A HOSPITAL.

"A body of attendants should be secured who are of good behaviour, who are distinguished for purity and cleanliness of habits, attached to the person for whose service they are engaged, possessed of cleverness and skill, endued with kindness skilled in every kind of service that a patient may require, clever in bathing or washing a patient, well conversant in rubbing the limbs or raising the patient or assisting him in walking, or moving about, well-skilled in making or cleaning beds, competent to pound drugs, ready, patient and skilful in waiting upon one that is ailing, never unwilling to do any act that they may be commanded (by the physician or patient) to do." Charaka, Sutra Sithana, Chap. 15, Upakalpauyam Adhyayam.

NURSES.

"Nurse should be loving, pure in body, speech and mind, capable and intelligent."

"Again there should be kept a number of men skilled in vocal and instrumental music, in

hymns, encomiums and eulogies, conversant with and skilled in reciting verses, pleasant discourses, narratives, stories and legendary histories, clever in reading the face and understanding what is wanted by the patient, approved and liked by him upon whom they are to wait, fully conversant with all the requirements of time and place and possessed of such politeness as to become agreeable companions. Charaka, Sutra Sthana, Chap. 15 Upakalpaniyam Adhyayam.

UTENSILS AND CLOTHING.

"Small vessels or caps, larger vessels for washing the hands and face, water vessels or Gangalams, small Jars or chembus dishes, metallic or earthen pans and kundas, hollow vessels for covering articles, wooden or metallic ladles, mats, shawls made of cotton and wool, vessels for boiling oils and ghee, and churning rods for preparing fomay and cooling medicines." Charaka Chap. 15. Upakalpaniyam Adhyayam.

"There should also be kept coverings for patients made of skins of finest quality, small pieces of cotton and woollen cloth, strings and cords, beds and seats, vessels called bringaras, a variety of deep spittoons full of water, and flatter vessels for holding spittle and evacuations, all placed ready for use, good beds placed upon

bedsteads and overlaid with white sheets and pillows for use when sleep is needed and carpets for lying down or sitting upon."

INSTRUMENTS.

"There should be kept articles necessary for the operations of Snehā, Sweda and Abhyanga, Predeha (plasters), Parisheka (fomentations), Anulepa (rubbing), Vomitting, Purging, application of oily and other kinds of Enemata, Erhines, Urination and passing of stools well-washed mullers and flat stones that are smooth and rough, and neither smooth nor rough and diverse kinds of instruments domestic and surgical Dhuma Netra (smoking tubes), Vasti Netra (enema tubes), Uttaravastika (vaginal irrigator), brushes and swabs, balances and weights, measuring vessels and baskets."

Charaka Sutra, Chap. 15, Upakalpaniyam Adhyayam.

DIET AND MEDICINE.

"The mansion should also be stored with an adequate supply of Lava (Perdix Chinensis), Kapinjala (francoline partridge), Sasa (hare), Harina (deer), Eṇa (black antelope), Mṛiga Matrika (a species of deer fatter towards the abdominal and hinder parts), Urabhra (sheep) and cows yielding copious milk, of quiet disposition, healthy, having all calves living and well tended with food."

and drink and drink and kept in a fold that is properly cleaned." the college attached to the temple of the Venka- testars in the village of Chennampet District.

"In a Hospital drinks such as Madhu, Seethu, Sura, Sauveeraka, Thushodaka, Mairaya, Medaka, Dadhi, Dadhimanda, Uthaswith, Dhanyamla, and Muthra should be kept ready." Charaka Sutra Sthana, Chap. 15. Upakalpaniyam Adhyayam.

"So also should be kept grains such as shali, Shastikay, Mudga, Masha, Yava, Tila and Kulutha and fruits such as Badari, Mridweeka, Karmarya, Parushaka, Ashaya, Amalaka, Vibhithaka and diverse other articles fit for the operations of Sneha and Sweda" and articles that are both Emetics and Purgatives, those that are Astringent (Sangrahaniya), those that increase the appetite (Deepaniya), that promote digestion (Pachaniya), soothe the system (Upasamaniya), those that destroy Vata, Pitta and Kapha and such other things as may be needed in view of other anticipated evils and other things again that may conduce to the ease, comfort and happiness of the patient, should similarly be kept ready." Upakalpaniyam Adhyayam Charaka.

HOSPITALS IN SOUTH INDIA.

An Edict dated 1067 A. D. by Veerachola Maharaja of Choladesa refers to a Hospital containing 15 beds for the use of the students of

the college attached to the temple of the Venkateswara in the village of Tirumakudal in Chengalput District.

The edict gives the names of Braamhi Raasa yanam Vasaaharaataki, Dasamooladeereetaki, Kalyaana Lavanam, Lasunaadyeranda Tailam, Bilwaabi Ghritam, Dravavarti, Sunetravarthi and other preparations of the hospital Pharmacopeia numbering twenty.

Another edict at Malakapuram, Guntur District by Ganapati Dev. II Century A.D. refers to a grant of 20 acres of land for a maternity hospital and another 20 acres for a General Hospital.

The edict gives details of the salary paid to the physician, surgeon and attendants and other expenditure incurred at the Hospital.

“Prasutyarogya salabhya n
Pratyekam Puttikadwayam”

LEARN EVEN FROM AN ENEMY.

Given the necessary funds every art would flourish at its height. The art of surgery, the art of curing poisons, etc have their seeds still preserved in the science of Indian Medicine and I tell you that we are not very far behind the West in the Science of medicine or even surgery. The invention of the microscope and of chloroform are of very recent origin. Knowledge is not anybody's vested property. The Ayurvedists may

easily acquire it. And therefore, I. would request you not to run away disappointed that we have lost everything. We can revive the science and bring it to its original glory, We have no enmity with the western system as our principle is "learn even from an enemy." We shall never be averse to learn even from an enemy and to build up our sciences once again.

This is what is said by Charaka. "Even though the words of advice be from an enemy, if these words are laudable and conducive to fame, long life, health and wisdom, they shall be heard and shall also be acted upon." Buddhimaata amitrasyaapi dhanyam yasasyam aayushyam, poushtikam, lonkyaan abhyupadisato vachah srotavyam anuvidhaatavyam chetl. Charaka Vimana Ch. 8. V, 618.

That is the right ideal for a student So to a wise man there is no enemy; the whole world is the teacher, It is only to the unwise that there are enemies in this world. Kritsno hi Loko Buddhimata'n Aacharyah, Satru Scha Abuddhimattaam eva. Charaka Viman. Ch. 8. 6/8.

"The present system of governance aims at preserving order rather than ensuring progress."

This is said by Sir. M. Visweswariah, one who has been in the service of British Government for nearly thirty years. It is the present system of Government that was responsible for the decline of Indian medicine, alongwith other Indian arts and sciences and so it is the duty of every one here and outside to see that Indian arts are once again encouraged and that India is made the centre of attraction as it was in times of yore. Foreigners should come once more to our modern Takshasilas that are to arise in the near future. It is the pride of our ancient glory that makes you think of our originality. If no Charaka or Sushrita is produced in our modern Universities, it is because there is no encouragement for originality, in the present-day system of education. But there is no need for despair What is required is earnest, honest and perseverent work.

**"Kshudram hridaya daurbalyam
tyaktwottitha Parautapa.**

Geeta : Ch. 2, "

**Young man : Cast off this ignoble dejection
of heart, Stand up and do your duty,**

CH. IX.

The definition of Ayurveda its scope and importance.

आयुर्वेदमनन्तपारम् ।

AYURVEDA - THE TOP SCIENCE.

न हि ज्ञानेन सदृशं पवित्रमिह विद्यते । गीता-तद्विद्धि प्रणिपातेन
परिप्रदनेन सेवया ॥

"Verily, there is nothing more sacred than knowledge. Learn this by prostrating at the feet of the teacher, by investigation and by service."

In order to understand Ayurveda, the student must first learn the meaning of the terminology and the language used in Ayurveda. The approach of Ayurveda to man is quite different. The spiritual outlook is very important.

If the modern scientists cannot understand some of the Ayurvedic theories, it is because of the limitations of modern science. As and when science advances, the ayurvedic lore becomes more and more understandable. To use my Super Science, which means, that it is a welcome combination of Philosophy and Science. Further Scientific Research will prove this one day, because truth must always prevail.

सत्यमेव जयते ।

AYURVEDA THE TOP SCIENCE OF TYPICAL MATTER.

SOURCES OF KNOWLEDGE

1. Science has been defined as 'specialised knowledge' or 'ascertained truth.' According to this definition, Ayurveda is a science, because that which is not true cannot form part of Ayurveda. The word, Ayurveda means knowledge of the Science of Life.

2. In addition to the methods of experiment and observation which are the sources of knowledge in the Modern Sciences, Ayurveda accepts concentrated meditation and intuition as a method of acquiring knowledge. In this method of acquiring knowledge through concentrated meditation, the ideas (Bhaavas) originate from inside without the aid of any external stimulus i. e., perception through the sense organs. He who relies solely on observation thinks more of differences than of similarities. The methods of investigation in Ayurveda are more synthetic leading to oneness, Adwaits, whereas the tendency in Modern Medicine is more analytical leading to dissipation of ideas.

3. The idea that the human body is a piece of mechanism prevailed progressively during the last two or three centuries. Any disease was considered to be a breakdown in the machine, which

should be set right by adjusting or repairing the damaged parts. The attention to the part or the particular organ assumes greater importance than the consideration of the whole man. Ayurveda considers man as a complex and inseparable combination of the material body, the senses, the mind and the soul. Happiness in life depends upon the control of the senses.

शरीरेन्द्रियसत्त्वात्मसंयोगः आयुरुच्यते । चरक सूत्र

4. Nothing in Ayurveda can be contrary to direct experience. In the opening lines of his text-book Susruta says.

आगम प्रत्यक्षानुमानोपमानैरविरुद्धमुच्यमानमुपधारय ।

Susruta-Sutra 1-22.

5. Whatever is stated by him is in accordance with (1) the testimony of accepted authorities (Aagama), (2) direct perception (Pratyaksha), (3) Inference (Anumaana) and (4) analogy (Upamaana). (Sootra 1-22). These four are the approved tests of accurate knowledge according to any science. In Ayurveda, anything that is contrary to reason is to be rejected.

Charaka says,

Science may start from any Axioms.

सत्यं वक्ष्यन्ति ते कस्मात् असत्यं नीरजस्तमाः । चरक

Sootra. 11-19.

6. Science is now valued for its practical advantage. A science may start from any set of

axioms consistent with one another and can construct a working hypothesis of practical utility. A good scientific theory accounts for certain known facts and enables us to predict new ones which can be verified by observation and experiment.

7. The theories propounded in Ayurveda explain a large number of apparently disconnected facts. These theories are easily understood by Ayurvedic Scholars and Practitioners. Ayurveda is not only a practical science, it is also an art requiring great skill.

SECTION 1.

THE FUNDAMENTAL THEORIES OF AYURVEDA

1. Evolution.

The evolution of the universe is a spiritual progression of inert matter into living matter and of living beings to higher and higher levels by the expansion of consciousness leading ultimately to the all-conscious-The Brahman. Evolution is not purposeless ; it is expansion of consciousness and the perfection aimed at is of intangible mind and not of gross matter.

2. Identity of the Constituent Element of the Universe and Man.

8. The basic elements that constitute both the universe and man are Matter and Spirit—Panchabhutas and Purusha.

पुरुषोऽयं लोकसंमतः ।

—(Charaka Shareera. 4—22).

9. Just as there are incalculably many minute cells in the structure of the human body, so also there are incalculably many units in the structure of the universe. (Ibid, 5 4).

10. He who sees the universe in himself and himself in the universe attains true knowledge of the Self, for he realises that he and no one else is responsible for his own pleasure and pain. Having acquired this knowledge, he performs all his actions in a spirit of selflessness, not expecting any fruit of his actions and in consequence he attains Moksha.

3. Physics.

11. The Universe consists of atoms which contribute to the five states of matter (not three), which correspond to the five senses of man. The states are Prithvi (solid), Aap (liquid), Tejas (radiant heat and light), Vayu (the gaseous state) and Akaasa (the spacial state). This is the Panchabhoota theory.

12. These five states of matter are relative. The most rarefied, the Akaasa state, which is responsible for the production of sound, is evolved from Avyakta—the unmanifested primordial state. The other states are successively evolved from the more rarefied element to the more and more condensed state, until the most condensed state of matter, namely, the solid, is reached. The ideal of the complete unification of energy and matter which modern science has been attempting to establish and the synthesis of the various phenomena of sound, electricity, light, heat, taste and smell were conceived by Ayurveda at a very early date.

It is the senses of man that are responsible for the analysis of the different kinds of waves of several lengths, so as to make them cognisable as the different states of matter. In fact, it is the mind of man, acting through the senses, that classifies the phenomena and presents them to the Aatma (the soul) for recognition. If you remove the senses, there is no world, and there are no states of matter for man to cognise. Having evolved from the same Avyakta (Primordial Matter), the states of matter are theoretically convertible from one to another. The Yogi who has attained Samaadhi (Self-realisation) sees them by Pratyaksha (direct vision) and also can convert one state into another by breaking down the atomic structure.

4. Chemistry.

There are six Rasas (tastes) corresponding to the six Indian seasons each season developing a particular Rasa to its best. The Rasas are Madhura (sweet), Amla (acid), Lavana (salt), Thikta (bitter), Ooshana (pungent), and Kashaaya (astringent).

Substances having different Rasas have different pharmacological properties. All substances may be classified according to their Rasa constitution. Generally speaking, substances having a Madhura Rasa (sweet taste) contribute most to the promotion of nutrition. The Kashaaya (astringent) Rasa is the least nutritious and the intermediate Rasas have less and less nutritious properties in the above mentioned order. See Principles of Ayurvedic Treatment by the author.

5. Anatomy.

According to the Sankhya Philosophy which is accepted by Ayurveda, the human body is the result of the integration of three constituents, namely

- (a) The Sthoola Shareera, the gross material body, consisting of the gross states of matter,
- (b) The Linga Shareera or Sookshma Shareera, the subtle body.
- (c) Kaarana Shareera, the Jeevaatma—the Ultimate Reality.

The Sookshma Shareera has 18 constituents :
 Mahat (intelligence), Ahankara (sense of self),

Manas (mind), five organs of sense, five organs of action and five Tanmaatras (pre-atomic stages of the five states of matter).

6. Heredity.

The Sukshma Shareera carries the Jeevaatma (individual soul from one body to another. This explains the inherited tendencies in the temperaments of individuals and the extraordinary inherited skill in particular arts possessed by certain individuals.

मनोजघो देहमुपैति देहात् ।

Charaka Shareera 2—31.

These traits are called Vaasanas, or mental propensities which go with the mind from one body to another.

7. Physioilogy.

The normal health of a living being is based upon the equilibrium of three ingoing nutrients, seven permanent tissues and three outgoing types of debris. These are called the 13 Dehadhaatus.

The three nutrients charged with specific properties are called Tridhaatus ; when vitiated they are called the Tridoshas. They are called Vaata, Pitta and Kapha. The Sapta (seven) Dhatus are Rasa (chyle or lymph), Rakta (blood), Maamsa (muscle) Medas (fat), Asthi (bone), Majja (bone marrow including brain matter) and Shukra (sperm or

germ plasm) and the three Malas or types of debris are : 1. faeces, 2. urine, and 3. perspiration

The seven tissues, Rasa, Rakta, Maamsa etc. up to Shukra are formed out of the tissues which are lower and grosser in the scale. Shukra is the final essence of the tissue metabolism. The prasada (healthy) state of these constituents leads to health, the vitiation of any of them leads to ill-health.

The Thridhaatus in the Human Embryo.

At conception, the Thridhaatus are contained in the fertilised ovum and are derived by a combination of the soul—Jeevaatma and the several elements from both the parents. In the foetus, when the three layers are formed, the ectoderm or the outer layer is predominantly made of the Vaata type of cells, the mesoderm or the middle layer is made of the Pitta type of cells and the endoderm or the inner layer is predominantly made of the Kapha type of cells.

The ectoderm contains the sensitive points that develop into the sense organs, including the skin and the whole nervous system and this may be called the Vaata layer. We now know that the outer layer develops into the special sense organs and that a portion of the outer layer, which is invaginated and tucked into the mesoderm, develops into the brain and the spinal cord and the whole nervous system.

The mesoderm is the precursor of the muscular, circulatory and other systems. This represents as it were the Pitta layer.

The endoderm is the precursor of the alimentary canal, the respiratory system, mucous membranes and probably also the lymphatic system. It may be called the Kapha layer.

When the foetus develops, the Thridhaatus are replenished from the mother's circulation and after birth through the milk, which represents Shadrasa Aahara—food having six tastes.

The plan of the 3 layer development (i. e.) of Vāta, Pitta and Kapha is already in the first cell. It is The soul that leads the plan according to its past karma (i.e.) hereditary factors.

Karma—Theory.

Man Reaches Perfection After Many Births.

अनेकजन्मसंसिद्धस्ततो याति परां गतिम् ।

Geeta 6—45.

Fully perfected through manifold births, man reaches the supreme goal of perfection. (Geeta 6 45)

The soul shapes the plan of the development of the cell and it determines what kind of organism the product is going to be (i.e.) whether it is going to develop, as a plant cell, or an animal cell etc., whether it is going to develop into a stupid man

(Taamasa) or an emotional man (Raajasa) or an enlightened man (Saatwika) or into a Yogi (superconscious man)—(See under Trigunaas below). Although the soul is common for all organisms, it helps the development of the different individuals in different ways by the vestures or embodiments that it assumes in the several bodies. As an illustration, it may be said that a lamp in an iron case does not shine outside at all, whereas when the same lamp is placed in a crystal case, it shines brilliantly.

An evolutionary process is going on in Nature, which finally leads every organism from the state of inertia and unconsciousness to the state of all-power and all-consciousness—The Brahman. "By whatever way they go, they reach me finally."

मम वर्त्मानुवर्तन्ते मनुष्याः पार्थ सर्वशः ।

Geeta 10—11

To put it concretely, the progress is from the mineral to the plant, then to the animal, man and God—that is-matter, life, consciousness, intelligence or self-consciousness and universal consciousness (i.e.) the Brahman. At the beginning of the ladder, we have pure matter, which is inert and predominantly Taamasa (i.e.) the spirit is dormant and at the top, we have pure spirit (Buddha State) (i.e.) from dormant to enlightenment which reigns supreme. This is called the state of Trigunaateetha-

a state of transcending the three gunaas—Satwa, Rajas and Tamas. Man has to reach this state by developing self-denial (Vairaagya) and self-control (Indriya Nigraha) through constant practice (Abhyaasa)

अभ्यासेन तु कौन्तेय वैराग्येण च गृह्यते ॥

Geeta.

Nishkaama Karma—Selfless Action.

This perfection is facilitated by Nishkaama Karma, that is, by doing all his actions as a dedication to God ; by this, all attachments will disappear and the mind will be self-controlled. Peace and tranquility will be established. This is self-realisation or Moksha.

शान्तिं निर्वाणपरमां मत्संस्थामधिगच्छति ।

Geeta 6—13.

This upward progression may be retarded by man by his own actions. He can make or mar his progress by his own actions.

आत्मैव हि आत्मनो बन्धुः आत्मैव रिपुरात्मनः ।

Geeta 6—5

आत्मानमेव मन्येत कतरिं सुखदुःखयोः ।

Charaka Unmaada. Nidaana.

Every man is the architect of his happiness or misery.

34. Karma is the result of the eternal energy—Aadi Shakti—that is responsible for all visible phenomena in the universe.

भूतभावोद्भवकरो विसर्गः कर्मा संज्ञितः

The emanation of the primal and eternal energy that causes the birth of beings with different names and forms is called Karma.

The Physiology of Nutrition.

35. Considering histologically, the human body consists of (1) ingoing nutrients, (2) more or less stationary dhaatus (i.e.) cells and tissues and (3) outgoing debris.

36. The Nutrients—thri-dhaatus—in their first phase are found in the alimentary canal as digestive juices and as such they act upon the food—Shadrasa Aahaara—taken by men and convert it into their own form, out of the like portion of the food. This is called Vipaka, which in effect, increases the dhaatus concerned. There are three such Vipakaas—bio-chemical changes which augment the Thri-Doshas in the alimentary canal. The food which is made up of Anna, Udaka, Praana, (i.e.) solids, liquids and gaseous material, which in the Aayurvedic language is called Shadrasa Aahaara is thus converted to Kapha, Pitta and Vaata in the different processes of digestion. The Thri Dhaatus are called dhaatus, because, they support the body in their normal condition. In the augmented form, in the alimentary canal, they are ordinarily called Aahaara Rasa—Food essence and they are absorbed into the body proper and enter the first dhaatu called Rasa (chyle or lymph). They thus get mixed up with Rasa-Dhaatu and other dhaatus in the course of their circulation.

In the alimentary canal, they are separate by themselves and detached from the tissues and debris. (Sanghaata Avasthaa and Avyaapi).

37. The Thri-Dhaatus are absorbed by the cells in the mucus membrane of the alimentary canal and circulate in every part of the body. They provide the cells and tissues with all the food materials that each requires for its nutrition and growth. Therefore, they are said to be nutrient material (Poshakaas). The Thri-Dhaatus together may be described as the vital fluids or ingoing, organised protoplasmic, nutrient material, out of which cells, tissues and organs are formed and also nourished, The circulation of Thri-Dhaatus is more extensive than the circulation of lymph or blood.

38 But, in the Pathological condition, Kapha has a tendency to get congealed and to obstruct the passages (Stotases) and it generally damages the processes of lubrication ; Pitta has a tendency to become more liquid and to weaken the digestion and vitiate the other bio-chemical processes in the body and Vaata has a tendency to expand indefinitely, cause pressure and disturb the nervous activity of the vital forces in the body. This relationship of thri-doshaas and Sapta-dhaatus in the pathological condition, is that of Dosha Dooshya—vitiator and vitiated. For further information, see Tridosha Siddhanta or Deha Dhaatu Vignaanam by Dr. A. Lakshmipathi.

The Nourishment of the Tissues and Metabolism.

39. The nourishment of the several cells, tissues and organs has been explained in Ayurveda on the analogy of three illustrations (Susruta Sootra. Ch. 14 — commentary by Dhuhana).

1. The analogy of milk being converted into Curd-Ksheera Dadhi Nyaaya.

2. The circulation and drainage on the analogy of irrigation channels and fields of crops. Here the food is brought to each cell, which selects whatever it wants and rejects or throws out what is not of any use to it—Kedaarakulya Nyaaya. The beautiful lotus draws its food from the dirty soil, in which it grows by a selective power bestowed on it by nature.—Susruta.

3. The analogy of pigeons picking up whatever each wants from the thrashing floor—Khale Kapota Nyaaya.

40 The Rasa Dhaatu goes direct to the heart and then spreads in all directions and nourishes the whole body ("Kritsnam Sareeram Tarpayati")—Su. Soo A. 14-2 So, it is through the medium of the Rasavaha Srotases (the lymphatics) that the nutrients—Tridhaatu Kanaas—have to traverse

and reach all the Avayavaas of the body. ('Sarva Sareera Avayava Dosha Dhaatu Malaasaya anusaarini-Rasah.' Su. soo. A. 14-5).

Mental Science—The Theory of Trigunas.

41. Man is the integration of the physical body, and the mental body, which is the psychosomatic concept. The mental body has three constituents; Satwa — enlightening — Prakaasha; Rajas—exciting—Roshā; and Tamas—depressing—Moha (infatuation and bewilderment). The predominance of Satwa leads to harmony, of Rajas to emotion and of Tamas to depression. Rajas and Tamas when vitiated become the cause of both mental and bodily diseases.

42. Constitutional traits or in-born tendencies or qualities are classified in Ayurveda into three categories called Trigunaas. The constitutional factors leading to emotions are due to Rajoguna. The constitutional factors leading to inertia are due to Tamoguna. The constitutional factors leading to equilibrium or harmony are due to Satwaguna. The mental and physical characteristics of every individual in health and disease are determined by the predominance of one or the other of these three constituents called Trigunas.

43. A man with the predominance of 'Satva' in his nature is said to possess such qualities as

self-realisation (Jnaana), intelligence, wisdom, (Medha) self-control (dhriti), memory. (Smriti) unattachment, truth, non-violence, forbearance, charity, and love (maitri), sympathy, freedom from greed (Aparigraha) freedom from hatred (Adwesha), love, penance (tapa), fearlessness, bravery, contentment, cleanliness, living faith in God etc. He is more or less intuitively gifted with the faculty of right perception (Yatharthadarśa) and right conduct (Yatharth-akaari) and therefore is competent enough to discern right from wrong. As such, he is considered by others as trustworthy or infallible (Aapta).

44. A man with the 'Rajasic' mind has the following qualities in him—lust, passion, avarice, jealousy, hatred, arrogance, hypocrisy, ferocity, cruelty, impatience, greed, indulgence in sexual pleasures, etc., all leading him to foolish and feverish activities.

45. A man with the 'Tamasic' mind has such qualities as ignorance, lack of intelligence, inertia, idleness, stupor, want of faith in God, worry and anxiety and thus he is more or less dominated by ignorance, indolence and stupidity.

—Geeta 18-26-28, Susruta, Saareera 1-18,
Charaka Saareera 4-37

46. The Yogi, who has succeeded in transcending the Trigunas remains steady in mind and is unaffected by any emotion (Sthita prajna). He has realised **Atma** (the self) by direct vision. He is

said to be perfectly healthy (swastha), which means literally, "placed in the self". To him, pleasure and pain, gold and stone, are the same. In this state of Samaadhi, he can perform supernormal acts such as seeing through solid and opaque walls, breaking down the atomic structure of the elements and converting one element into another, seeing at a distance, telepathy etc. Ashta Aiswarya—(Charaka Shareera, 1-20.)

Pathology—The Tri-Dosha Theory.

47. The equilibrium of the Tri-dhaatus is health and lack of balance between them is disease. Histologically, a disease may be defined as the morbid interaction between the vitiated nutrients (Doshas) and the tissues (Dhatus) i.e., Dosha Dhaatu Sammoorchanam.

48. Vaata, Pitta and Kapha, the nutritive fluids feed the living organism through the nervous, digestive and lymphatic systems respectively. Vaata is constituted predominately of Rajas, Pitta of Satwa and Kapha of Tamas. Their equilibrium is health and their ill-balance is disease.

49. The Tri-dhaatus are to be known, both in their normal and abnormal states by the consequence of the actions for which they are responsible. Thus, according to Charaka (Sutrasthan Chapter 18) Pitta, Kapha, and Vaayu are responsible for the following. 'Vision' (as opposed to

perception which is due to Vaata). digestion, heat-production, hunger, thirst, softness and suppleness of the body lustre, cheerfulness and intelligence are due to Pitta in its normal state. Snehanam, (oiliness) smooth working of joints, general stability of the body, general build, potency, strength, forbearance, courage, and greediness are due to Kapha in its normal state. Enthusiasm, inspiration and expiration, voluntary actions like talking and walking, the due circulation throughout the body of its supporting elements like chyle, blood etc., are due to normal Vaayu.

50. These functions of Vaayu are further elaborated thus by Charaka in the Sutrasthan. Chapter 12.

51. Vaayu upholds all the supporting constituents and their due circulation throughout the body. It exists in five forms, viz., Praana, Udaana, Samaana, Vyaana and Apaana. It is the urger of all voluntary movements, great and small, the producer of restraint as concentration of the mind, the stimulator of all the senses and the carrier to the mind of all sense impressions ; it holds together the various elements of the body in their proper form and maintains the cohesive unity of the body as a whole ; it brings about speech ; it is the basis of sound and touch, as well as the root matter of the organs of hearing and touch ; it is the origin of joy and enthusiasm and the stimulator of Agni.

It is the cause of the Doshas getting dried up and the Malas (impurities) being thrown out of the body ; it is the cause of the division in all vessels of the body, both microscopic and macroscopic ; it is also the cause, which makes embryos in the womb to take particular forms ; and it stands as evidence of the existence of the existence of life—all these are the actions of Vaayu, when unexcited. (Chap. 12.) In order to understand the mixing up of the ideas of matter and energy and physical and mental functions of Vaayu, Pitta and Kapha, the theory of the Thrigunas has to be understood.

52. Clinically, these theories are very helpful in the diagnosis and successful treatment of the multifarious diseases of the mind and the body. These theories represent the synthetic psychosomatic conception of man, which deals with his mental and physical states, including the effects of the vitamins, hormones, toxins, antibodies and all factors already known or to be known hereafter, relating to the self and the environments including those of time and place. The physiology of Ayurveda begins where the physiology of Modern Science ends. This means that the Ayurveda deals with the known through its science and the unknown through its intuitive philosophy.

53. Vaidyaratna Capt. G. Srinivasamurthi in his Scientific Memoranda to the Chopra Committee says (P. 336, Vol. II).

"To my mind, these (the fundamental chemico-physical notions of the Hindus) show in certain points striking correspondence to the most recent teachings of Modern Western Science. In certain points, the Hindus have gone even further in their speculations. Will these conceptions also be justified by the future discoveries of Modern Science? It is rash to assert but difficult to deny. But when we realise how some of these theories have been justified by the most recent events in Modern Science, one cannot help entertaining the feeling that, as some theories have already proved true, the same may happen in the case of the others as well.

Imbalance of Bodily Constituents.

54. A number of men may drink the same water containing virulent Typhoid bacilli or the vibrios of cholera. Even a fourth of the people may not get the disease and all those infected may not show the same virulence. The environment factor cannot explain the whole cause. The imbalance of the physical or mental constitution of men appears to be necessary to explain why some are prone to the attack of a particular disease and some are not.

55. Undesirable emotions such as fear or irregular habits may be responsible for the excitement and vitiation of Vaata, Pitta and Kapha or of Rajas and Tamas and when the balance of these is disturbed, the pathogenic microbes may easily find entrance and cause the respective diseases.

112 56. A great deal is known about the tubercle bacillus. Some people get ill with Tuberculosis, while others do not. In those who become ill, the process is arrested in some, and in others, it becomes very virulent. The notions of modern scientific medicine are very vague in many of these matters.

57. Ayurveda has an explanation to give. According to Ayurveda, the factor of personality is vitiated by the following reasons in the case of an attack of Tuberculosis. (1) Excessive strain (Saahasam), (2) irregular food (Vi-hamaasanam), (3) Neglecting to answer calls of nature at proper time (Vegadhaaranam), (4) Wasting of the vital tissues by sexual excesses (Dhaatukshayam). These four are given as the chief predisposing causes of Pulmonary Tuberculosis. We have therefore to study the whole man, the inborn tendencies and the physical and emotional conditions have to be evaluated by the study of the Thri-doshas and the Thri-gunas and the tissues affected in order to get at a correct diagnosis and prognosis. This knowledge enables the patient and the physician to notice the earliest symptoms of the disturbance of the balance. A wise patient may avert the disease by noticing the first causes and avoiding them in the Sanchaya or the stage of accumulation of the doshas—See paras, 60 and 87.

Physical and Mental Diseases.

58. Man being an integrated whole, no disease should be classified as mental or physical. The fact that physical life depends largely upon the psychic

life and that the undesirable emotions are considered diseases—Raagaadi Rogas—capable of causing other bodily and mental diseases, explains the emphasis of Ayurveda on the necessity for careful study of the personality of man as a whole in making a diagnosis.

The Theories of Ayurveda are Simple and Easily understood.

59. The Theories of Ayurveda have not been so far verified by Modern Research, because the Instruments of Science have their limitations, when they have to deal with living matter. Further research is sure to establish the truth of these assumptions, which are like axioms as far as Ayurveda is concerned. Even the illiterate people and particularly women in India understand these theories which they apply in their daily life. The practitioner of Modern Medicine refuses to understand them, because he has lost his moorings in the Indian Culture, on account of the bias that he has been taught to acquire by his new education.

60. There are six Kriyaakaalas or stages in each disease, suitable for treatment. The interaction between vitiated nutrients and tissues is divided into six stages (1) Sanchaya (accumulation of the doshas), (2) Prakopa (their excitation), (3) Prasara (their expansion), (4) Sthana Samsraya (change of place or localisation), (5) Vyakti (manifestation of the full fledged disease) and (6) Bheda (destruction-

of the tissues). If the disease is diagnosed and checked in an earlier stage by treatment suitable to that stage, the disease itself may be prevented from developing beyond the stage of premonitory symptoms. These six stages of disease are comparable to the several stages of inflammation. *Ayurveda is essentially an Aadhyaatmika Science.*

61. Thus, although the Spirit of Ayurveda is scientific in a modern sense, it is essentially an Aadhyaatmika Science—A science dealing with the soul. Ayurveda combines philosophy with science, so that the subtle processes of life, which cannot be studied by modern scientific method are understood by utilising known wisdom (Budhi) through reason (Yukti). Ayurveda is thus a superior science, as it deals not only with inert matter but also with spirit and its progressive evolution. "The Hindu Ideal of Sacrifice" Vide below.

62. The scope of Ayurveda is said to be limitless. The Ayurvedist can learn even from an enemy. Ayurveda says that there are no enemies to the wise. The door of Ayurveda is ever open to all true knowledge based on experiments and observation, the deductions of which have been tested by competent judges (i.e.) Scientists and found to be sound, if these deductions are not contrary to known facts and if they are for the benefit of humanity.

शिष्टानुमतः लोकप्रहप्रवृत्तः

शास्त्रवादः, स चाऽऽप्तागमः ।

(Charaaka 11—27)

63. Therefore Ayurveda is said to be Punar-navam, ever renewing itself by further study and research.

Life is not Purposeless.

64. According to Ayurveda, the life of man is not purposeless. Man does not live for the sake of material enjoyment. He has a goal to reach through a severe discipline through the four Aashramas ; Brahmacharya (bachelorhood), Grihastha (married life), Vaanaprastha (the life of a forest recluse) and Sanyaasa (a life of renunciation all fruit of one's labours and of devotion and dedication to God).

The Four Aspirations or Values of Life.

65. The object of the study of Ayurveda is the satisfactory attainment of the four values or aspirations of life, Dharma, Ardhya, Kaama and Moksha. Moksha is a stage of perfect peace, free from all desires with complete destruction of unhappiness and pain. The attainment of this state is the ultimate object of the teachings of Ayurveda—(Paramaardha).

66. The modern scientist cannot understand the values of life, because the most delicate instruments of science cannot measure the conditions such as goodness, beauty, happiness or the super-sensory state of a Yogi. This state is beyond the perception of the five senses (Ateendriya). It is a subjective condition, which is known to the Yogi by direct perception (Pratyaksha). It is admitted that there is no room for such super-sensory matters in modern medicine. If the study of Western Medical Science and of the Bhagavat Geeta were combined, the result may be comparable to the study of Ayurveda. The spreading of the Ayurvedic principles throughout the world would mean the disappearance not only of the fear of disease and of wars, but also of the fear of poverty, old age, and death.

67. For this purpose, Ayurveda is studied not merely by the Vaidyas, for professional purposes; it was taught to all classes of people (Sarva Varnas) as a compulsory subject in order to enable them to acquire the four aspirations of life mentioned above.



SECTION II.

MATERIA MEDICA

68. The Materia Medica of Ayurveda is copious. More than 70 per cent of the raw drugs of the pharmacopias of the modern world are produced in India. Ayurveda has its own pharmacology. All food materials and drugs are classified according to their (1) Physical and Chemical properties (guna), (2) taste (rasa), (3) heating and cooling properties (virya), (4) ultimate action after digestion (vipaaka) and (5) specific action (Prabhaava). This classification has been found by the practising physician to be most useful clinically.

69. The action of the food materials depends largely upon their taste and that of the drugs is due to their specific or dynamic action. Scientists have now confirmed the efficiency of certain drugs like Punarnava, Kutaja (Kurchi) and Sarpagandha by modern Scientific analysis. But, a large number of drugs used in Ayurveda are still awaiting research and rediscovery.

70. In these days of organo-theraphy, vitamins, anti-biotics, bacteriophages and shock therapy, modern research may be greatly benefited by the critical study of the-honoured Ayurvedic preparations selected from the text-books and from traditional usage. For instance, we have the following prescriptions from Vaagbhata.

(1) For disease of the blood ; fresh uncooked goat's liver with bile. He also recommends for such diseases liquid expressed from horse or cow dung

mixed with ghee and honey.

भक्षयेदाजसामं पित्तयुतं यकृत । गवाश्वशकृतो रसम् ॥
(Vaagbhata). Ch. 2—30

(2) For disease of the blood with enlarged glands, he recommends pigeon droppings with honey.

(3) For a cough accompanied by increased metabolism, liquid extract from the dung of a sucking calf, mixed with honey, is prescribed.

71. The rationale of such extra-ordinary treatment with animal excreta has to be verified by research.

72. Basavaraajeeyam says that 5 or 7 live bugs taken with betal leaf on three successive days will cure intermittant fevers accompanied by chill, i.e., malaria. In the Andhra country, this is used as a secret remedy by many Ayurvedic Physicians.

Nallula Varusatoda Vidiyamu Seyan
Chelibethu Triraatra Jwaramula Drunchutarude.
(Chapter 1).

73. The seeds of the marking nut (Bhallataka-Semi Carpus Anacardium) ground well and soaked in cow's urine and the milk of Snuhi (Euphorbium) are strongly recommended for internal and external use in leucoderma.

74. The above citations show the power of observation and the spirit of Research of the Ayurvedic Scholars. Modern chemical and biological research is not sufficiently advanced to verify the reactions of human beings to these organic preparations, without further clinical research.

SECTION III

SURGERY.

75. Even more surprising is the scientific attitude of Susruta as a Surgeon. He demanded that cutting instruments be made of the best steel and sharp enough to split a hair. His antiseptic preparations before, during and after the surgical operation (Poervakarma, Pradhaana Karma and Paschaat Karma) should excite the admiration of even the most up-to-date modern surgeon.

Susruta-Sutra—5.

76 Laporotomy was performed for the removal of foreign bodies from the intestines. (Susruta Treatment—14.) Caesarian operations were performed. (Susruta Nidaan 8—15). Skilful grafting of skin and the grafting of a live flap of tissue in plastic surgery are described in detail. Dissection of the cadaver was systematically conducted. (Susruta-Saareera 5-50.) (Ashtaanga Samgraha—Sootra—35.)

77. Anaesthesia was used in surgical operations. Bhoja Prabandha refers to a cranial operation performed on King Bhoja—927 A. D. after he had been rendered insensible by a fine powder called Sammohini (Anaesthetic).

मोहचूर्णेन मोहयित्वा शिरःकपालमादाय

तत्करोटिकापुटे स्थित शफरकुलं

गृहीत्वा.....कपालं यथावदारच्य

संजीविन्या च तं जीवयित्वा ।

Saphaala Kulam is probably a tumour removed from the brain.

78. From Mahavaakya, we learn that Jeevaka, the personal physician of Buddha, practised cranial surgery with success. (Book VIII. 1-15.)

79. It is stated that the Emperor Bimbissara sent Jeevaka the brain surgeon to the King of Egypt.

80. The principle of Neuro-Surgery, namely, of cutting the nerve at its root for a quick cure of the disease was recognised.

ऊर्ध्वमूलं अधःशाखं ऋषयाः पुरुषं विदुः ।

मूलप्रहारिणः तस्मात् रोगान्शीघ्रतरं जयेत् ।

81. It was known that the Sensorium of the seat of the senses was in the brain (the head) and therefore the head is called the most important organ in the body.

प्राणाः प्राणभृतां यत्र श्रिताः सर्वेन्द्रियाणि च

यदुत्तमाङ्गमंगानां शिरस्तदभिधीयते । चरक

Charaka Sootra 17-12

82. Surgical operations were not resorted to unless it was absolutely necessary. Shri Shankaracharya is said to have been treated medically for Bhagandhara (Fistula in Ano) when an operation was not advocated (Sankara Vijaya Chapter XVI).

SECTION IV

CAUSES OF DISEASE AND ITS DIAGNOSIS

83. The diagnosis of disease was considered more important than the treatment. The principles of treatment may be briefly summarised thus : (1) Remove the cause, (2) Eliminate the toxins and (3) Soothe the injury.

Correct Diagnosis—Most Important.

84. Charaka says, that a physician who cannot enter into the innermost soul (Antaraatma) of the patient with the bright light of his own intelligence cannot successfully treat his disease. (Vimaana 4-14.)

ज्ञानबुद्धिप्रदीपेन यो नाविशति तत्त्वद्वि ।

आतुरस्यान्तरात्मानं न स रोगांश्चिकित्सति । चरक

Charaka-Vimaana 4-19.

85. The superiority of Ayurveda lies in studying carefully the factors of constitution and personality and treating the man as a whole i.e., the integrated body, mind and soul.

86. The causes of disease are beautifully summarised in Ayurveda into three groups viz, (i) unsuitable use of the senses—Asaatmya Indriyaartha, Samyoga (ii) faulty judgment—Pragnaa Aparaadha, and (iii) the effects of time—Parinaama. Research should be conducted on the incidence of the seasons (Rutus) in India and their influence of the onset of disease, and on the

Pharmacological properties (Rasa, Guna etc.) of food materials and drugs. Today, the methods of investigation of disease are lopsided giving no real attention to the man as a whole. The physician should develop an inquisitive outlook towards the less obvious symptoms of ill-health, so as to warn the patient from getting ill. The people should be taught self-control and self-reliance, so that, the patient may observe the earliest symptoms of ill-health and correct them himself. The modern physician, who depends too much on instruments and laboratories is unable to develop the most valuable faculty of enquiring into the earliest symptoms of disease.

Diagnosis of the Six Stages of Disease.

87. In Ayurveda, the progress of disease is divided into six stages,

सचयं च प्रकोपं च प्रसरं स्थानसंश्रयम् ।

व्यक्तिं भेदं च यो वेत्ति दोषाणां स भवेद्भिषक् । सुश्रुत

(Susruta-Sutra Chap. 21—36.)

88. It is only he, who knows the six stages of Dosha vitiation, namely, Sanchaya (accumulation), Prakopa (excitement), Praaara (extension), Sthaanasamsraya (localisation), Vyakti (definite appearance of disease), and Breda (destruction of tissues) is fit to be called a Bhishak, (i.e.) a physician.

89. Even in the first stage, certain symptoms may be observed by which an intelligent patient may note the variation due to accumulation of Vaata, Pitta and Kapha individually.

तत्र संचितानां दोषाणां स्तब्धपूर्णकोष्ठता,
पीतावभासता, मंदोष्मता च इति लिङ्गानि भवन्ति ।

तत्र प्रथमः क्रियाकालः ।

सुश्रुत

Susruta Sootra Chap. 21—18.

90. If Vaata is accumulated, the abdomen may become distended, and stiff. If Pitta is accumulated, the skin, urine and stools may acquire a yellowish tint. When Kapha is accumulated, the heating mechanism in the body becomes slow and there may be heaviness and feeling of laziness. Further, one would notice as a distinguishing characteristic "Chakaraana Vidweshah", a desire to avoid those substances which increase the particular dosha, that is already accumulated.

91. For example :—If there is accumulation of Vaata, things which increase Vaata, such as, cold air, and dry and pungent substances and any sort of movement of the part of the body is disliked by the patient and conversely, there is a desire for rest, for warm air, and for sweet and oily foods.

92. If Pitta is accumulated, heat, foods and conduct that increase Pitta are disliked and similarly if Kapha is accumulated cold, moist and

heavy foods etc , are disliked. There is an inclination for 'Ahaara' and Vihaara (food and habits) of the opposite nature in all the three types of accumulation of Doshas.

93. Both the metabolic diseases arising in the body (Nija) and the diseases caused by the invasion of microbes from outside (Aagantuka) are caused only when the three nutritive fluids are vitiated. There is immunity from diseases as long as these three constituents are in equilibrium.

94. Vaata acts through the nervous system and influences the directing mechanism. Pitta acts through the digestive system and influences the heating mechanism. Kapha acts through the lymphatic system and influences the cooling mechanism of the body.

95. The vitiation of Vaata is easily known by pain or loss of function, of Pitta by a burning sensation or perverse appetite and of Kapha by heaviness or accumulations of fluid.

Help Nature's Efforts to Cure.

96. These likes and dislikes are efforts of Mother Nature to warn the patient about the impending danger. If the causes responsible for the accumulation of the Doshas are removed, the Doshas will revert to their normal state. But, if persisted in at the stage of accumulation, in which the disease has not yet commenced, the disease

will pass on to the next stage of excitement (Prakopa) and is aggravated.

संचयेऽपहृता दोषा लभन्ते नोत्तरा गतिः ।

ते तूत्तरासु गतिषु भवन्ति बलवन्तराः । सुश्रुत

Susrutra Sutra, Ch. 21

97. A wise man will carefully notice those delicate warnings of mother nature and avoid the causes of disease, whereas an ignorant person will fall a prey to disease.

लक्षयन्त्यबुधास्तु न । वाग्भट

Vagbhata, Sootra, Chap. 11.

Learn to Prevent Advance of Disease.

98. The duty of the physician here is to guide the patient to act in the right direction, because prevention is always better than cure.

हितमेवानुरुध्यन्ते प्रपरीक्ष्य परीक्षकाः ।

रजोमोहावृतात्मानः प्रियमेव तु लौकिकाः ॥ चरक

Charaka Sutra 28—33

99. Discerning men (Pareekshakaah) consider everything beforehand carefully and adopt only such habits as are suitable to their health and are conducive to ultimate happiness. Ordinary men of the world (Laukikaah) who are immersed or steeped in desire and ignorance (Rajo Moha Aavruta Aatmanah) adhere only to such things as are pleasing (Priyameva) to themselves for the time being. The distinction between the two conditions

of Hitaam (happiness) and Priyam (pleasure) should be carefully noted. Happiness (Hitam) is that which is suitable to a person in the long run. Pleasure (Priyam) is that which satisfies the senses for the time being. Wise men prefer happiness whereas worldly men are prone to prefer pleasure, (See principles of Treatment page 227 by the author.)

100. Scientific knowledge (srutam), the faculty of understanding. (Buddhi), fortitude (Daardhyam), contentment (Trupti), suitable conduct (Hita Sevanam), purity of speech (Vagavisuddhi), self-control (Sama) and courage (Dhairyam) are the attributes of deserving men (Pareekshakaas) and the opposite qualities of ignorance, inability to understand things properly, want of memory, mental weakness, dissatisfaction, bad habits, insincerity, licentiousness and timidity are the qualities commonly found in ordinary worldly men (Loukikaas), stepped in desire and ignorance. (Charaka, Sootra. Chap, 28-65). Therefore these latter suffer from a multitude of mental and bodily diseases.

Infectious Diseases.

101. It was recognised that certain diseases such as Leprosy, Tuberculosis, and certain other fevers, eye diseases and venereals are caused by microbic infection through touch, water, food and air (spireya Abhyavahaaradoshaat).

कुष्ठं ज्वरश्च शोषश्च नेत्रामिष्यन्द एव च ।

अपैसर्गिकरोगाश्च संक्रामन्ति नरान्नरम् । सुश्रुत-कुष्ठ
Susruta Kushta Nidaana.

अधर्मेण प्रजां वर्तयन्ति, तस्मात् उध्वंसन्ते जनपदाः । चरक-विमान
Charaka Vimana.

102. These infections depend largely on seasonal variations which are attributed to adharma (improper conduct). Adharma is ultimately traced to uncleanliness and vicious habits and greed such as over-eating. The leaders behave in unrighteous and unhygienic ways and thereby epidemics break out and destroy cities and villages.

103. Ayurveda recognises undesirable emotions as diseases and prescribes detachment and self-control (Indriya Nigraha) for their cure. These undesirable emotions are basically Six: Kaama (desire), Krodha (anger), Lobha (greed), Moha (infatuation or bewilderment), Mada (haughtiness), and Maatsarya (jealousy) known as Raagaadi Rogas.

104. Although Ayurveda stresses on the necessity for attention to the soul, the dweller in the body, it also gives equal importance to the healthy conditions of the body so that man can attain his four aspirations.

Diagnosis of Individual Personality or Temperament.

105. The individual constitution (Prakriti) is an inherited condition that cannot be altered fundamentally. It is a life long concern for every individual. This factor of individual personality is of supreme significance in determining the

condition of health and disease in man. This is expressed by the following quotation from Charaka.

समपित्तानिकफाः केचिद्गर्भादि मानवाः ।

दृश्यन्ते वातलाः केचित् पित्ताः, श्लेष्मलास्तथा ।

तेषामनातुराः पूर्वे, वातलाद्याः सदातुराः । चरक

106. From the moment of conception, majority of men are equally balanced as regards Vaata, Pitta and Kapha. Some, however, have predominance of Vaata, some of Pitta and some of Kapha; of those the first i.e. those who have an equilibrium of the Doshas enjoy perfect health (Anaaturaah). While the others have a delicate health and are therefore easily liable to some disease or other. (Sadaaturaah.)

विपरीतगुणस्तेषां, स्वस्थवृत्तेर्विधिर्हितः ।

107. Those in whom any one of the doshaas is predominant by birth have to keep up their equilibrium by the use of substances having properties of Vipareetha Guna (natural antidotes to the predominant dosha which is natural to them). Thus the future constitutional type of the individual is determined for him even at the time of fertilisation of the individual ovum. The constituent tendencies of Vaata, Pitta and Kapha which are natural to every individual are not

ordinarily harmful to the individual, because they are habituated to the increase or decrease of these constituent doshas from birth, just as the poison in which an insect lives, does not injure that insect, although it may be a deadly poison to others. However, when the time for death arrives, the doshas become powerful. They exist with the life and end with the life—Jaatetu Gataaryushah.

Vaaie Prakriti—Asthenic or Neurotic Temperament;

108. People with Vaata temperament generally have their skin rough and dry and their bodies slender; they have their voice rather low and indistinct. They do not have good sleep. They are talkative. They are quick to start any venture and suffer from a lot of worries. They are prone to fear, to be quick in love or hatred. They are quick in grasping things, but are also quick in forgetting them. They cannot withstand cold, shivering or fits. Their hair, moustache, nails teeth, face, hands feet and limbs are rough, brittle and easily cracking. The joints are creaky. Morally they tend to be dishonest, jealous and thievish. they are generally weak, have less children and They are not flourishing either in health, or wealth, because they are incapable of accumulating money.

109. According to Susruta, their nature seems to resemble that of a goat, jackal, rat, cat, camel, dog, vulture, crow or ass (Susruta Sareera, Chap. 4).

110. If these qualities are overlapping and mixed up, they are called mixed temperaments, or Prakriti.

111. One is said to possess an asthenic or neurotic temperament when constitutionally the elements of earth and water do not predominate. Owing to lack of proper nutrition his skin and hair are thin and dry. (sushkah), the organs are undeveloped and emaciated (Laghu), his body and mind are not firm (Chala), the tissues are unduly harsh (Parusha) and his nervous system is irritable. He is so much excitable that a small stimulus causes large responses in him. He loses control over himself and shows temper. Cold being depressent to vitality, cold weather, and diets and drinks of cooling nature are not agreeable to him. All such factors tend to lower the vitality e.g. physical or mental over-exertion, physical or mental shocks, over-work, want of sleep, abstinence from food and drink, worry and grief etc., are inimical to him. Having this fundamental defect in him, he is ill-equipped to fulfil his objects in life and is much more liable to contract diseases incidental to the derangement of *Vaayu*. (Dharma Dhatta.)

Pitta Prakriti—(Sanguine Temperament).

112. Those with Pitta temperament cannot generally endure heat. They are easily susceptible to hunger and thirst, and have a tendency to the

hair getting prematurely grey, to wrinkled skin or bald head. They may have also soft, delicate hair and moustache of a dull yellowish colour. (Kapila.) They have good appetite, eat well. They are generally very courageous and irresistible in battle, but they cannot endure much hardship. The muscles and joints are rather unsteady and loose. There may be a disagreeable smell in the armpit, mouth, head and skin. They are less virile. They are moderate in strength, general or scientific knowledge and also in their means of livelihood. Susruta says that their nature seems to resemble that of a serpent, owl, cat, monkey, tiger, bear or mangoose.

113. An individual in whom the element of agni that carries on the tissue break-down or catabolism is hereditarily above the normal level is said to have the temperament or 'Prakriti' of Pitta. When the destructive processes are comparatively more predominant than the anabolic (or building up) process, the individual has certain characteristics that distinguish him from others. Considering his physique, he consumes more food and water to make up the deficiency and also he excretes more waste products in the form of sweat, urine, faeces etc. Owing to predominance of oxidation of the waste products, his body, skin, nails, hair etc., are clear and bright, and his build up is of the intermediary type, neither too thin

nor too fat. As a result of excessive tissue breakdown, the signs of old age set in earlier in his body.

114. As to his mental condition the role of metabolism being high in him, his intelligence is keen; and his arguments are irrefutable. His mind and body are active, but neither too irritable, nor too slow.

115. Besides, all diets, drinks, drugs and the seasons, that are of heating nature do not agree. while those diets etc., of a cooling nature agree with him (Dharma Dhatta).

The Prakriti of Kapha—phlegmatic Temperament.

116. People with Kapha temperament have a full and well nourished, oily, smooth delicate and beautiful body with strong compact and steady limbs. They have profuse black hair. They are rather slow in taking food and in their habits and actions. They are steady in the gait and are less affected by hunger, thirst, heat and sweat. They have a clear voice and complexion. They are generally well educated, comparatively rich, strong and vigorous in sex life. Susruta considers that their temperament resembles that of a lion, horse elephant, cow, bull, eagle or swan.

117. The person in whom the element of water is predominant over that of agni or in whose tissues constructive process is, constitutionally

in excess of the destructive one, is said to have the temperament of Kapha. On account of natural good nutrition his body is well-nourished, well-proportioned handsome, strong, stout, but nimble in movements. The amount of food he takes is less in comparison, to the build up of his body. He can stand hunger, thirst and privation well. Mentally, he is overinhibited and hence unexcitable: power of reproduction and capacity for forbearance and remaining unruffled is great. The persons having these characteristics often succeed in winning friends for themselves and attaining their worldly objects easily—(Dharma Dhatta.)

Trial Treatment for purposes of Diagnosis.

118. Ayurveda accepts, according to circumstances, the principles of both Allopathic treatment (i.e.) treatment opposite or contrary to causes and symptoms and Homeopathy, (i.e.), treatment by similars. This is explained below.

Trial Treatment by Allopathic principles.

—Upasaya.

119 *Hetuvipareetha Treatment—Allopathy—*

(a) *Medicine.*—The administration of Sunthee —(Ginger) Ushnatwa quality, in Kapha diseases caused by Seeths or cold (Seethatwa quality).

(b) *Diet*—The administration, of Maamsarasa or meatjuice (a form of food) in fever caused by fatigue. Here

Maamsarasa is used to remove fatigue which is the cause of the fever.

- (c) *Hygienic conduct* — In a disease of Kapha type which is caused by excessive sleep in the day time, the act of keeping awake in the night is undertaken to counter-act Kapha.

120 *Vyaadhivipareetha Treatment* :—

- (a) *Medicine* — The administration of astringents in diarrhoea, the administration of 'Khadira' in Kushta (leprosy): the administration of (a specific like) Sireesha in Visha (Poison). Here the medicine is given as a specific in the particular disease in a routine manner irrespective of the nature of the deranged doshas.

- (b) *Food* — Taking pepper soup is useful in indigestion.

- (c) *Hygienic conduct* — The act of straining when passing stools is advised in Udaavartha, — a disease with severe constipation and pain in abdomen due to irregular peristalsis as a therapeutic measure.

121 *Hetu Vyaadhi Vipareetha Treatment* :—

- (a) *Medicine* : — The administration of Dasamoola for Vatasodha i.e. an inflammation (Swelling) caused by Vaata. Here,

Dasamoola is the ameliorative measure for checking the cause (Vaata) as well as the disease 'Sodha' (Swelling) inflammation.

(b) Diet == The administration of Takra (Buttermilk) is especially recommended in Vaata Kapha Grahane (a sort of lenteric diarrhoea). Here, Takra checks Vaata-kapha and it is also a specific for Grahane.

(c) Hygienic conduct: -- In sleeplessness (Tandra) produced by the use of excessive foods, the act of waking up (Jaagarama), in the night is recommended. Here, the act of keeping awake is Rooksha (Opposite of Snigdha) and thus, it is the opposite of both the cause and disease.

122. Trial Treatment by Homeopathic Principles

Hethu Vipareethaardhakaari Treatment or Homeopathy:—

(a) Medicine--In an inflammatory process of Pitta type, we recommend the external application — Upanaaha Sweda (hot fomentation or application of warm poultice) with substances or drugs that promote Pitta. This measure looks paradoxical because drugs which produce Pitta, are employed in inflammation of Pitta type.

(b) Diet—In inflammation heading towards suppurative (Pachyamaana Sotha) the administration of stimulant diet is recommended which produces Vidaaha (burning sensation) and Pitta. Here, the disease is caused by Pitta, the agents employed to effect the cure also promote Pitta.

(c) Hygienic conduct—Threatening a patient suffering from insanity of Vaata type, threatening with the help of disguised robbers, police etc, is resorted to as a treatment. Fear which is one of the causes of promoting Insanity, increases Vaata but, here, it (fear) helps the patient as an ameliorative measure.

123 Vyaadhi Vipareetha Arthakaari :--

(a) Medicine—In a form of vomiting, the administration of an emetic is recommended to cure it. In diarrhoea, the initial administration of castor oil is often recommended.

(b) Diet.—In diarrhoea, milk diet, which is also a laxative according to Ayurveda, is often found useful.

(e) Hygienic conduct.—In a form of vomiting, straining to vomit more sometimes effects a cure.

124. Hetuvyaadhi Vipareethaardhakaari :—

- (a) Medicine:—Administration of a poison to cure a case of poisoning.
- (b) Diet—In alcoholism, the administration of alcohol is sometimes recommended.
- (c) Hygienic conduct—In Moodha Vata (a sort of Vaata disease) caused by physical exertion, swimming is recommended as an ameliorative measure.

The above 18 examples are given as instances of trial treatment which are intended to help the physician in his diagnosis of the disease.

Intrinsic and Extrinsic Diseases.

125. To sum up the etiology, Ayurveda holds that there are two classes of diseases i. e., intrinsic (Nija Roga) as well as extrinsic. (Agantu Roga,)

126. The root cause of intrinsic diseases is the accumulation of waste matter "dosha" in the body. This accumulation is brought about in three ways:—

(1) Due to impairment of vitality, the tissues are rendered unfit to expel their excretions completely.

(2) Due to over-activity of the destructive phase of metabolism, a larger amount of waste products than the body can dispose of is produced.

(3) Due to over-eating and under exercise the tissues get clogged with incompletely oxidised products.

127. These three factors are called the disorders of "Vayu" "Pitta" and "Kapha" respectively, and are said to be the essentially predisposing factors, which determine the occurrence of disease, inasmuch as, in the normal condition all other etiological factors remain ineffective. Accumulation of waste matter brought about by the disorder of these three "doshas" is, in course of time, followed by infection, which seems to be an attempt on the part of nature to oxidise and to eliminate it.

128. Ayurveda lays greater stress, on the intrinsic factors that bring about accumulation of "Dosha" than on infection, which is believed to be the incidental or the subsidiary cause of disease. Charaka says, "fever cannot occur unless there is accumulation of "Mala" or "dosha" in the body. "Dehinaam nahi nirdosham jwarah samupasevate". (Charaka. Chikitsa. 3—12.)

129. Hence as regards the treatment, Ayurveda lays greater emphasis on the eliminative methods than on the palliative remedies.

130. The diseases brought about chiefly, by the infection of bacteria and bacterial poisons are called extrinsic (Aagantu Roga) diseases. But since bacteria cannot grow in a tissue in which

the three elements are in perfect accord, some kind of elemental disorder in the tissue must precede before bacteria can establish their foothold in it. Mostly, it is due to our errors of omission or commission (Pragnaaparaadha) that our bodies are rendered favourable to the growth of bacteria. Hence such measures are necessary as can set the internal system aright in order to make the body unsuitable for the growth of bacteria.

131. So far as the extrinsic diseases are concerned, in addition to these measures, the anti-bacterial therapy, the outstanding achievement of the modern science also must be taken advantage of, if we have to make Ayurveda a complete system of medicine.—Dharma Dhatta.

Regulate Personal conduct to Prevent Disease.

132. The teachings of Ayurveda lay more emphasis on the regulation of the personal conduct of the individual, so that, the onset of disease may be prevented, instead of attempting to cure it after it takes a firm hold.

उत्पन्नानर्थप्रतीकारात् अनर्थोत्पत्तिप्रतिबंध एव वरम् । रोगविज्ञानं

Roga Vignaanam 1-P85 (Tel).

133. An ignorant person either by his ignorance or by carelessness does not recognise the onset of disease in time in the early stages, when it lies hidden and destroys the very life. The patient then succumbs to the disease like a

mangoose tied to the tail of a strong bull and dragged along helplessly. Charaka-Sootra.

त्यागाद्विषमहेतूनां समानां चोपसेवनात् ।

विषमा नानुवध्नन्ति, जायन्ते धातवः समाः । चरक

Charaka Sootra 26—36

134. By giving up things which cause Dosha vitiation and by adopting things which produce their equilibrium, the vitiation of Doshas does not continue and their equilibrium will be restored.

Re-Orientation of Health Propaganda.

135. There should be a new orientation in the Public Health Propaganda, so that, people may be educated to notice the earliest symptoms of disease and their causes, which lie within themselves such as their physical, emotional and moral conduct, apart from microbic infections which come from outside,

SECTION IV: THERAPEUTIC METHODS IN AYURVEDA.

136. It will be seen that the Principles of Treatment according to Ayurveda are valid for all time. Any form of treatment of proved utility which may be known already or which may become known hereafter is welcome to Ayurveda.

137. The therapeutic methods of Ayurveda, are primarily divided into three categories.

(1) Antahparimaarjanam includes all internal treatment by food and medicines.

(2) Bahihparimaarjanam consists of all external treatment which includes bodily cleanliness, and adjustment to environment.

(3) Sastrah pranidhaanam consists of the application of caustics, leaches, actual cautery and includes the use of all surgical instruments with the necessary skill.

138. The treatment is also further divided into three classes

(1) *Daivavyapaasraya Treatment*:—This is the treatment which depends upon faith.

139. (2) *Yuktivyapaasraya Treatment*:—This is the treatment which depends upon reasoning out the causes of diseases and devising suitable ways and means for its cure. It deals with the appropriate administration of food, medicines and habits in suitable combinations.

आहारौषधद्रव्याणां योगः ।

140. This includes all the modern medical treatment and the examination of the aid of instruments and laboratory appliances. All physical, ethical and moral treatment is included in this class. All that we now do in Modern Medicine comes under this head.

141. **Satwaavajaya Treatment** — Treatment which depends on self-control developed by concentration of the mind (Chittavritti Nirodhah) by constant practice and by detachment from outside objects by Abhyaas and Vairaagya.

142. Summarising the system of Ayurvedic treatment, it may be said that the whole procedure may be compressed in one sentence, which runs as follows :—

Ayurvedic treatment consists of,

- (1) Purging out of the offending agents.
- (2) Soothing the injured parts of the body.
- (3) Removing the causes of ill-health, in all diseases according to circumstances.

संशोधनं संशमनं निदानस्य च वर्जनम् ।

एतावत् मिषजा कार्यं रोगे रोगे यथाविधि । चरक-विमान

—Charaka. Vimaana.

143. For the attainment of these objectives, there are firstly Medical Surgical treatments, secondly are six Upakarmaas — Six methods or lines of treatment and thirdly the Panchakarmaas — five Karmaas or five procedures.

141. The six Upakarmaas or lines of treatment are :-

- (1) Brimhanam (Promoting Growth).
- (2) Langhanam (Effecting reduction).
- (3) Snehanam (Lubrication).
- (4) Rookshanam (Removing fat or drying)
- (5) Swedanam (Promoting sweating or dilatation of all channels).
- (6) Sthambhanam (Promoting contraction of all channels).

Pancha Karmas or the five processes of Treatment

145. All the procedural measures adopted in the treatment of diseases in Ayurveda are essentially grouped into two categories, viz.,

- (1) Brimhanam and (2) Langhanam.

Brimhanam and Ganghanam.

(1) Brimhanam, also called Santarpanam is to augment the production of new tissues in the body. It is essentially a 'Samana' treatment and it usually allays Vata or Vata-pitta combinations in the body. Foods like milk, meat extract etc. and measures like rest, sleep, Snehakarmas, Anuvaasana Vasti (see below), Abhyanga etc., are Brimhanams. Brimhanam is usually employed when there is good digestion.

(2) Langhanam, also called Apatarpanam, and Karshanam is to promote depletion of Doshas or the offending agents or toxins from the body. Langhanam is to promote 'Laghu Guna' or

lightness to the body. It is chiefly employed to check Kapha but it is also sometimes employed to check the other Doshas as well. Langhanam is divided into (1) Sodhana Karmas, (2) Samana Karmas.

(Sodhana Karmas—Eliminative Measures.

145. These are the measures or procedures employed to purge or eliminate the Doshas from the body. According to Charaka these are four, viz. :

- (1) Vamanakarma (Emetics).
- (2) Virechana Karma (Purgation).
- (3) Niruha Vasti (medicated enemata).
- (4) Nasya or Seersha Virechana (Errhimes).

Vaagbhata added Raktamokshanam or blood-letting and made them five.

The Nasya may be a Samana measure also.

Samana Karmas—Soothing Measures.

147. The Samana (soothing) process of Langhanam are,

- (1) Trishna Nigraha (Restraining Thirst).
- (2) Maaruta (Exposure to air).
- (3) Aatapa (Sunbath).
- (4) Upavaasa (fasting-starvation).
- (5) Paachana (administering digestives)
- (6) Vyaayaama (physical exercise).

Vaagbhata added 'Deepana' or the administration of carminatives to the above list of Samana Karmas.

To sum up, the four Sodhana Karmas, viz., (1) Vamana, (2) Virechana, (3) Niruhavasti, (4) Nasyakarma to which is added Anuvaasana Vasti (Samana Karma), we get a group of five procedures called Panchakarmas. These are usually employed in many diseases as preliminary measures before administration of Samana medicines in the treatment of diseases and in the Rasaayana treatment to gain positive health;

- (1) Vamana is used to eliminate Kapha ;
- (2) Virechana is used to eliminate pitta ;
- (3) Niruha Vasti, also called Aasthaapana Vasti is used to eliminate Vaata.

It is usually administered in the form of a medicated fluid as an enema or rectal injection. It is used before administering food.

(4) Anuvaasana Vasti, means the process of injecting medicated oil or ghee or animal fat into the colon usually with the intention of keeping it for an hour or so, inside the bowels for its absorption. This is administered after food, otherwise digestive derangement is said to result.

(5) Nasya or Seersha Virechana is to eliminate Kapha in the srotases of the head.

It is recommended that both Niruhavasti and Anuvaasana Vasti should be administered alternately and that only one process should not be repeated many times. If Niruha Vasti is repeated continuously

adverse result i.e., vitiation of Vaata itself may result.

Besides these, there is also one Vasti called Uttara Vasti, which is employed as a urethral injection for men and as vaginal injection for women. There are many forms of Vasti Karmas like Pichcha Vasti which are administered to soothen the inflamed rectum.

Langhana is the Foremost of all Treatment.

There is a common saying,

“Langhanam Paramoushadham”.

“Langhanam the foremost of all treatment.”

Although several other soothing processes are included in the Langhana Treatment, the treatment by fasting is generally understood by the word Langhana.

The technical word for Langhana is Upavaasa. The word Upavaasa literally means Upavasateeti—Upavaasah. It means sitting by the side of the sacred fire abstaining from food and meditating upon God. Langhana treatment is for the body and Upavaasa treatment is for the mind.

The signs and symptoms of proper Langhana treatment are:—

“Flatus, urine and stools are passed freely, the body becomes light, the thorax, the eructations and the throat become purified from Kapha dosha, dullness and exhaustion disappear, there is free

perspiration. liking for food returns, hunger and thirst arise together, and the mind becomes cheerful.

"If Langhana becomes excessive, there will be a sensation as if all the joints are broken, pain all over the body, cough, dryness of the mouth, loss of appetite, disgust for the food, thirst, weakness of the ears, continued indistinctness of mind and error, upward motion of the Vaayu, darkness of mind, loss of strength of fire in the body."

Charaka Sootra Chap. 22.

As a rule, Langhana treatment is not recommended in purely Vaata diseases.

Snehakarma and Swedakarma.

Before conducting any of the Pancha Karmas, Snehakarma (administration of ghee, oil etc, internally as well as lubrication or Abhyanga externally) has to be done and this is often followed by a suitable form of Sweda Karma (sweating process).

The Three Rogamaargas.

148. There are three Roga Maargas or the paths in which the Doshas are likely to be held up during their circulation in the body, producing diseases of different kinds: (1) Koshta or the alimentary canal, which is called Aabhyantara Roga Maarga (internal path). (2) Saakhas (branches) which are (1) Skin (lymph), (2) Rakta,

548 Aayurveda Śikshaa-Historical Background [V.1Ch. 9]

(blood), (3) Maamsa, (4) Medas, (5) Asthi, (6) Majja and (7) Sukra. This path is called Baahya Roga Maarga. In the third path, the Doshas are located in the intricate localities called Marmas and in the joints of bones (Marmaasti Sandhis). When the diseases are rooted in Saakhas or in Marma-asthi Sandhee, the causative Doshas have to be brought down to the Koshta by adopting measures of Sneha Karma and Sweda Karma repeatedly. Later, they may be eliminated from the Koshta. Sneha Karma and Sweda Karma are especially useful in chronic diseases caused by Vaata and Kapha generally.

Sometimes, Sodhana Karma is employed to counteract the Vega (movement) of the Dosha, e. g. Virechana Karma (Purging) is employed in Oordhwagata Raktapitta (Haemorrhages from Nose, Mouth etc.). Besides these measures, there are many forms of treatment like Varthi (medicated pessary or suppository), Dhoomapana (smoking medicated substances), Gandhoosha (gargles and Anjana (Collyrium) etc.

Three Kinds of Treatment.

149. All the above forms and processes of treatment are included and classified into the three

- (1) Antahparimaarjanam (Internal purification),
- (2) Bahih Parimaarjanam (External purification),
- (3) Sasthra Pratikshaanam (Surgical operations).

Treatment by Faith.

150. Although the ways and means of attaining the desired object may be slightly different, the system of Ayurvedic treatment is generally similar to the modern medical treatment, now followed all over the world. This is to help nature (1) to remove the injurious substances whether they consist of visible microbes, invisible viruses or subtle mental emotions.

151. In addition to the above methods of treatment Ayurveda includes Daivavyapaasrayam and Sattwaavajayam treatments, which are of the nature of the mental and spiritual training of the individual. In this wide field of operation, Ayurvedic treatment differs from modern medical treatment.

The Ayurvedic Physician combines in himself the role of a phycho-therapist and a moral and a spiritual adviser to the patient.

152. Alexis Carrel, the great scientist, Nobel Laureate, says that he actually saw a case of Tuberculous Peritonitis in a woman cured by treatment by faith (See Special Chapter below.)

153. We should not make the mistakes committed by the Western nations. The emotions of a man should receive greater attention of the physician than the material comforts. It has now

been proved by experiments that emotions like jealousy and anger work more powerfully than medicines administered to man. Faith is an extraordinary emotional condition, which, in the state of ecstasy, may cause great changes in the functions and even in the structure of the body, in health and disease.

Fire Walking by Kuda Bux.

154. A young Kashmeeri Mohammadan by name Kuda Bux baffled a London audience in a Surrey garden consisting of medical men, who examined his feet before and after, by walking across a trench of glowing fire—12 feet long, 6 feet wide and 8 inches deep. The surface temperature of the fire measured 800 degrees Fahrenheit. Bux's feet were found to be of the same temperature before and after walking on the fire. ("The Hindu" 30th September, 1936.) Two Englishmen, who attempted to walk after him jumped off, after walking a couple of steps with their feet considerably blistered—Bux said "Faith can make you do anything".

Fire walking is a common annual feature in India, both in temples and mosques. But, those who have no faith will surely have the feet burnt badly. For further details see separate memorandum

on "Treatment by Faith" which follow.

***Rasayana and Vaajeekarana Treatments—
 (Rejuvenation and Aphrodisiac Treatments.)***

155. Ayurveda pays special attention to improving the natural processes of resistance not only to disease but also to prevent old age and to preserve youthfulness and sexual vigour. The underlying theory is that, if the waste products of tissue metabolism are removed from the body, and if it is made quite free from these waste products, youthfulness may be preserved. Physical purity and mental purity are both required. Just as there are special foods and drugs for promoting nutrition of the physical body, so also there are special foods and drugs for promoting the nutrition of the mental and spiritual body. For details of Rasaayana and Vaajeekarana Treatments refer special memoranda on these subjects. See below.

SECTION VI.

HYGIENE

156. According to Ayurveda, prevention of diseases is effected by inculcating perfect cleanliness through a severe discipline of man from birth for developing self-control (Indriya-Jayam).

157. The first step in the discipline is to get up from bed early in the morning and then to clean the teeth, paying special attention to each tooth separately and not injuring the gums. Even the tooth brushes are to be secured fresh, every day from the twigs of trees possessing antiseptic and astringent properties. These should be suitable to the constitution of the individual and appropriate to the disease from which he may be suffering.

158. Great importance is attached to diet, regular exercise, massage and baths. All these promote cleanliness.

159. Everyone has to do the duty assigned according to his inborn qualities and capacities. (Guna Karma Vibhaagasah). Selfless devotion to one's duties for the good of humanity (Loka Sangraha Mevaapti) promotes the greatest happiness for oneself and for the society and leads to Paramaardha i.e. the ultimate goal of salvation.

Geeta 18-45-47.

160. This happiness lies in the contentment (Santosha) or the satisfaction of being serviceable to the world. Paropakaaraardham Idam Sareeram is the motto.

The Factor Personality of Prevention of all Diseases.

161. Unlike the machine, Man has mind, Manas—Manava is one who has a mind. He has the power of thinking and deciding his future conduct. The decision depends upon the personality of every individual, which is inborn in all living creatures and persists as long as the organism lives. It is often transmitted to the offspring.

162. The genius of Ayurveda is more to train by strict discipline the mind and senses of man than to perfect the machinery external to himself. The theory is that such training of the personality to perform selflessly the duties assigned to each man by nature, according to his qualities and capacities (Guna and Karma Vibhaagasah), and to perform those duties with detachment and for the good of humanity, is conducive to the greatest happiness of body and of mind.

163. Differentiation into groups according to capacity is the rule of nature, (Geeta 4-13.) This is unsurmountable. The work of each man is determined by his qualities (Trigunas). The salvation of every man lies in performing Swadharma, i.e. doing his duty to the best of his peculiar abilities. The happiness that comes in the satisfaction of having done one's duty selflessly includes freedom from fears of disease, of old age and death.

164. The Sanskrit word 'Sukha' (happiness) is derived from Su (good) and kha (the Indriyas or senses)—Sukha meaning equability of the senses. Permanent happiness is obtained by the control of the senses. The most important thing in this is detachment. (Charaka Saareera 7—23). Self-discipline (Jitendriyatwa) is the master key for the prevention of many diseases of mind and body.

Emotions Cause Disease.

165. Emotions like anger, greed and hurry are potent sources of disease. These are called Raagaadi Rogaas. Desire produces anger. Anger results in infatuation; both have their origin in Rajas (Gita). The senses, mind and intellect are the seats for these emotions. Therefore, one should develop control over these emotions, which are the worst enemies of man. Otherwise, all material and spiritual knowledge will be useless.

काम एष क्रोध एष रजोगुण समुद्भवः ।

पाप्मानं प्रजहि ह्येनं ज्ञानविज्ञाननाशनम् ॥ गीता

166. As I said already, prevention of disease is thus effected in Ayurveda through strict discipline of man to develop selfcontrol. Ayurveda teaches not only to live a happy life, but also how to die a happy death with detachment, contentment and peace.

167. Charaka summarises the ways and means of keeping Arogya (good health) as follows.

Those who are always Healthy.

नरो हिताहारविहारसेवी समीक्ष्यकारी विषयेष्वसक्तः ।
दाता समः सत्यपरः क्षमावानाप्तोपसेवी च भवत्यरोगः ॥
मतिर्वचः कर्म सुखानुबन्धं सत्त्वं विषेयं विशदा च बुद्धिः ।
ज्ञानं तपः उत्परता च योगे यस्यास्ति तं नानुपतन्ति रोगाः ॥ चरक.

168.

Naro Hitaahaara Vihaarasevee
Sameekshya Karee Vishayeshvasaktah
Daataa samah Satyaparah Kshamaavaan
Aaptopaseveecha Bhavatyarogah.
Matir Vachah Karma Sakhaana bandham
Satwam Vidheyam Visadaacha buddhih
Gnaanam Tapah Tatparataa cha Yoge
Yasyaasti tam Naanutapani Rogaah.

Charaka, Siddhi 11-27-30

One who is accustomed to suitable diet and habits, who always acts after proper reflection, who does not entangle himself in the objects of his senses, who is charitable, who behaves equally towards all living creatures, who is devoted to truth, who is forgiving, who serves with humility, all who are wise and who is contented with what he possesses.

(Charak's Shareera 2, 46, 47.)

169. In other words, one who has a happy combination of his thought, speech, and action, who has his mind under control, who has his intellect clear and who possesses knowledge of the soul and is devoted to austerity and Yoga never suffers from any disease.

Those who are always Unhealthy.
(Sadaaturaah.)

सदाऽऽतुराः श्रोत्रिय राजसेवकास्तथैव वेश्या सह पण्यजीविभिः ।
सदैव ते ह्यागतवेगनिग्रहम् समाऽऽचरन्ते न च कालभोजनम् ।
अकालं निहहविहारसेविनो भवन्ति येऽन्येऽपि सदाऽऽतुराश्च ते ।
चरक-सिद्धि.

170.

Sadaaturaah Srotriya
Raaja Sevakaah Tadhava Vesyaah
Api Panya Jeevibhih
Sa daiva Tehi
Aagatha Vega Nigraham
Sadaa Aacharante
Nach Kaala Bhojanam
Akaala Nirhaara
Vihaara Sevinah
Bhavanti ye Anyepi
Sadaa Aaturaah Chate.

Charaka Siddhi 11—27—30.

The Orthodox Brahmins, Kshatriyas in the King's immediate service, Vesyas (prostitutes) and petty traders are among those who are always unhealthy—for reasons stated below.

171. These four classes of people and others who likewise do not care to attend to the calls of nature at the proper time, who never have their food at proper time suffer from constipation (Vibandha), all sorts of pains and other diseases in the several organs of the body indefinitely and are therefore always unhealthy,

172. An Orthodox Brahmin, on account of his being constantly engaged in the study of Vedas, and his devoted attention to his religious rites, does not attend in time to the essential needs of his body and is therefore always unhealthy.

173. (2) A Kshatriya in the immediate service of the King, on account of his devoted attention to obey his orders, on account of his being answerable to many high state officials, on his being worried in his mind with something or other which is always urgent and on account of fear, does not care to attend to the essential needs of his body is therefore constantly unhealthy.

174. A Vesya who lives by prostitution (Paraangana), who has always to be on the alert to please her paramour, who is always busy in decorating herself with jewels and who has to pay scrupulous attention to her toilet (Mrujaa Nirataa), does not care to attend to the essential needs of her body and is therefore always unhealthy.

175. A Vaisya who always sits in one place (Sadaasanaath) and who is always greedy in buying and selling does not care to attend to the essential needs of his body at proper time, and does not have his meals at proper time and is therefore always unhealthy.

176. These four examples in the four Varnas or classes of people are given as illustrations of those who are always unhealthy.

Over-Eating — the Root Cause of Wars.

177. Charaka propounds the theory that slight over-eating i.e. the eating of a little more than is needed, by those who possess more than they require, is the root cause of wars. The following is his line of reasoning.

178. In the Satya Yuga, i. e. at a period when every man ate just what he wanted, everyone was happy. But, as time passed some people ate a little too much, simply because it was available. The result was that their bodies became heavier (Shareera Gouravam). On account of the body becoming heavier, they became easily tired after performing their usual work (Shrama). On account of weariness, they became lazy (Aalasyam). Then, they developed a desire to accumulate food and other articles for future i.e., hoarding (Sanchaya). On account of the desire to accumulate, there arose possessiveness — (Mamata). On account of possessiveness, there arose greed (Lobha).

179. In the second stage, on account of greed, the desire arose to accumulate more by deceiving others (Abhidroga). On account of the desire to deceive others, there arose falsehood (Asatya) and falsehood gave rise to many passions, such as lust (Kaama), anger (Krodha), pride (Mada), hatred (Dwesha), haughtiness (Paarushya), injury (Abhighaata), fear (Bhaya), excitement (Taapa), grief (Shoka), and mental perturbation (Chittodwega), etc.

180. The leaders, who are thus perturbed in mind, lead followers into Adharma (unrighteous

conduct), On account of Lobha, Krodha and Moha, they insult weaker people and have recourse to violence with deadly weapons ending in wars between countries, classes and races. They thus, either destroy others or be destroyed by others in the struggle. In this manner, Adharma (unrighteous conduct) which starts with greed in slight overeating, leads to wars between nations.

(Charaka-Vimana 3-26.)

181. This carries its own lesson.

Domestic Medicine.

182. It is not always that the aid of the physician is sought in our country, immediately after the appearance of the first symptoms of disease. The people are able to classify the symptoms of the predominance of Vaata, Pitta and Kapha respectively and apply some domestic remedies such as ginger, pepper, garlic, neem, asafoetida and musk, whose properties are well-known to them, to check the respective fault in the earliest stage (Kriyaakaala) of the disease. This brings about the equilibrium which makes the invading agent powerless to grow in the unsuitable soil. Immunity is thus acquired in many instances. Modern Research should help to enlighten us on the rationale of these domestic remedies, some of which are not yet even recorded in the text books on Ayurveda.

183. According to Ayurveda, there is nothing in the world which may not be used as a medicine ["Na Jagati Anoushadham " (Charaka) It all depends upon the capacity of the physician to

discover and utilise the available material as a medicine or as an article of diet or otherwise. Modern Medicine appears concerned with advertisements of more and more medicines of doubtful value to cure diseases, whereas in the long run, the purpose of the medical science should be to empty the hospitals. For this reason, Ayurveda was traditionally taught to every man and woman in India. Valuable aids to health such as massage, sweating, oil baths, regulated exercises and walks. Asanas, regular manual labour, games, recreation and prayer etc., in Ayurveda, constitute the daily routine (Dinacharya) of every citizen. Physio-therapy which promotes positive health is badly neglected in modern hospitals and medical colleges.

Supreme Goal of Medical Practitioner.

184. The Supreme Goal of a Medical Practitioner lies in selfless devotion (Nishkaama Karma) in his own profession. He can attain the highest Dharma by protecting his patients with tender care, as his own children.

स्वसुतानिव यत्नवान् । सुश्रुत

185. Charaka says that a physician who, for the sake of his livelihood, sells treatment as an article of trade, throws away heaps of gold and collects clods of mud in return for them. He, on the contrary who devotes himself to the giving of treatment freely out of compassion for living creatures attains the highest happiness (Moksha), because there is no other gift in the world superior to the gift of life.

SECTION VII. LIMITATIONS OF SCIENCE

186. The theories just enumerated may be explained to some extent in the light of modern scientific methods. It is in the scientific attitude of mind more than in the scientific results that the value of modern science is to be found. If there is any portion of Ayurveda, which cannot be identified with some branch of the Western system, it should not be considered fit only to be neglected. In fact, it is in the spirit of science that the value of Ayurveda lies. It should be noted that modern science itself has its own well known limitations, particularly, when it tries to explain the phenomena of living matter. Even the most delicate experiments and observations of modern science are too crude and too superficial to deal with matter relating to life, which is the subject of Ayurveda. The problems with which science deals at present are intrinsically inferior in human interest (Prajaaahitam). Further, the modern scientific method is not the only method of acquiring knowledge of reality.

187. Eminent scientists have accepted that a true and scientific theory merely means a successful working hypothesis. It is highly probable that all scientific theories may be wrong. Truth in science is a pragmatic affair. What a scientific man means by truth, is in the last resort, convenience. A good scientific theory accounts for known facts

and enables us to predict new ones, which are then verified by observation. (The Limitation of Science). By J. W. N. Sullivan 1949—Mentor book published by new American Library.

Ultimate values such as Dharma (duty or virtue), Purushartha (purpose in life) and Sukha (human happiness), with which Ayurveda deals, cannot be measured by any instruments known at present to modern science. Nor is it possible for every person to study and practise Yoga (concentration on the inner-self), unless he has the necessary preliminary qualifications (Adhikaara), for such study. He must also secure a proper teacher (Guru). These Theories of Ayurveda, have been accepted not as a matter of faith, but because, as I already said, they are proved by the four methods of investigation (Pramanas) and because also they are of great utility in actual experience. Ayurveda is an unqualifiedly practical science and so cannot be contrary to direct experience (Pratyakshs Avirodha). Whenever it is not possible for an ordinary man to verify certain facts by direct perception, he must naturally be satisfied with the statements of Aptas—those known to be the best authorities on the subject.

Positive Health is not got by Medicine.

188. The growth of industrial civilisation all over the world is leading the Western nations towards their downfall. The sons of many rich men in America today possess wealth without

having had to earn it. They never struggled against their environment as the poor villagers do. "Wealth is just as dangerous to health as poverty. Modern Civilisation with all the comfort, soft-living, hospitals, physicians, nurses, and sanitary fittings has kept alive many human beings of poor quality. These weaklings and their descendants." Alexis Carrel says "contribute in America, in a large measure to the enfeeblement of the white races." He says, that they are witnessing the physical, moral, intellectual and social failure. "They are now realising that they have been living under a delusion. They have begun to understand that they are decaying when compared to the hardy races" (Man the unknown P. 198). They are now attempting to mould the younger generation with a different ideal.

Modern Medical Science Creates Artificial Health.

189. Industrial prosperity on the one hand and modern medical science on the other, have created a kind of artificial health instead of inherent resistance to disease. Injections of a specific vaccine or a Serum for every disease may give temporary relief but it cannot be effective as a means of developing positive national health. Good health should be natural. The survival of the nation should not depend on the physicians. Inherent resistance to disease should depend on the positive strength of the individual. Disease is nothing but the development of the defensive

processes which oppose the invasion of the body and the struggle of the tissues and the mind against a disturbing agent. For instance, fever is the reply of the body and the mind to the presence of bacteria and viruses to toxins.

Hurry, Worry and Over-work are causes of Degenerative Diseases.

190. Modern Medical Science has been weighed and found wanting. In spite of all the hygiene and comforts, "the modern educated man dies suddenly in bed or in the office at an age, where his parents were tilling the land or managing their business vigorously",—Alexis Carrel. In place of infective diseases, which the white races have conquered, degenerative diseases such as softening brain, diabetes, heart and kidney diseases have cropped up. It is easy to conjecture that this premature wearing out of the modern man is due to mental worries, lack of economic security, overwork, absence of physical and moral discipline and excesses of all sorts without self-control. Modern comforts and habits imposed upon the dwellers of the present day cities do not seem to agree with Natural Laws. Their health is crumbling under the slightest strain. The stable health of Village worker is better than the volatile health of the civilised man.

Colossal Ignorance and Pride.

191. Even after the recent advances of science, our ignorance of the secrets is colossal. Many Medical Practitioners do not seem to realise the

vastness of their ignorance. Instead of feeling humiliated by his utter powerlessness in many situations in his daily life, the proud young doctor is full of egoism (Ahankaara) due to the materialistic mentality. I see that during recent years in Madras, doctors of Modern Medicine rank first among those who die at a very early age of such preventable degenerative diseases as diabetes, high blood pressure, and heart failure. This does not speak very well of their medical training. Over-eating, sedentary habits, smoking and drinking, hurry and anxiety, in their daily routine of life and faulty sexlife, which lead to these diseases, may be easily avoided by proper discipline and self-control.

182. I have great respect for the truly scientific research worker, untouched by commercial interests. But, I shudder to think that a third rate practice of Modern Medicine spreads into the Villages of India, to replace the ennobling ideals of Ayurveda by materialistic and outlandish ideas, quite unsuitable to our country. It is the spirit of Ayurveda that has saved the Indian Civilisation.

- 000 -

Section VIII UTILITY OF AYURVEDA IS ITS CLAIM FOR PATRONAGE.

193 The chief claim for Patronage of Ayurveda is its utility. In spite of the fact that some of the theories of Ayurveda are not so far accepted by modern science, the successful practice of

Ayurvedic Physicians has continued through the centuries, and more than 80 per cent of the people of India seek its help even today. The people almost always resort to some well known indigenous drugs available in the locality, before they seek the advice of a physician. Clinical experience is after all the best test of the efficiency of the treatment. This proves not only that the system of Ayurveda is alive in the minds of the people, but also that it is resorted to the moment the need for treatment arises. Ayurveda may therefore be deeply rooted in the soil of India, and to have contributed largely to her cultural heritage.

Objects of the Study of Ayurveda.

194. Charaka says that when the question arose as to which is the foremost among diverse means that exist for prolonging life, (Praanavardhanaanaam), the proper reply according to Aynurveda should be Ahimsa—non-violence—and not food. Which is the foremost amongst diverse means that exist for enhancing strength, the reply should be enthusiasm and not bodily strength. Which is foremost amongst diverse means that promote nutrition and build of the body, the reply should be learning and not meat, Which is foremost amongst diverse means that contribute to satisfaction (Nandanaanaam), the reply should be control of senses and not sensual enjoyment. Which is foremost amongst diverse means that contribute to delight, the reply should be self-realisation

(Aatma jnaanam) and not aphrodisiacs. Which is the foremost amongst diverse means that guide to achieve the four human aspirations, the reply should be Brahmacharya (i.e.) to live in God and not celibacy.

195. This is the view of the Professors of Ayurveda. (Iti Ayurvedavidō manyante).

इति आयुर्वेदविदो मन्यन्ते । चरक Charaka Sootra

196. Although Ayurveda recognises the worldly or material happiness, in its different aspects as mentioned above, as the next best, the Science of Ayurveda has a higher purpose, which is really of supreme importance. For example, food may promote life for the time being but Ahimsa serves promotion of life best in the long run and similarly the other items.

अहिंसा प्राणिनां प्राणवर्धनानां उत्कृष्टतमम् ।

Charaka Sootra 30—14.

Section IX.

RESEARCH IN AYVRVEDA

197. We should conduct research in Ayurveda in order to make it the best system of treatment in the world. As the word Ayurveda implies, it is the Science of Life. It has no limitations of race, climate or country ; its door is open to all true knowledge from any source. The application of Modern Methods of Pharmacological technique conducted in collaboration with experienced Ayurvedic Scholars is sure to result in the advancement of both Ayurveda and Modern

Medicine. Literary, pharmacological, biochemical, clinical, psychological and philosophical research should all be conducted side by side.

198. The methods of research in Ayurveda should not be to imitate what is followed in other countries. The research should be based upon the fundamentals assumed by Ayurveda. Ayurveda has a good working hypothesis, which has helped the successful practice of Ayurveda through the centuries and it is still a living force today with the Ayurvedic Physician and the patient.

199. Herein, I have laid emphasis on the following four points which are fundamental to the study of Ayurveda in separate institutions established wholly for its promotion.

(1) Ayurveda is superior to modern medicine in some respects and can incorporate all the advances of modern science, but modern science cannot adopt all that Ayurveda teaches, unless it accepts the existence of the soul in man as the Director of the several processes of life.

(2) Man is not to be treated as a machine. The factor of personality and the emotional states are largely responsible for the happiness or misery of the individual and to a certain extent for the advent and cure of disease.

(3) Modern Medicine should not be extended to the villages as such, unless it is integrated with Ayurveda by adopting its basic principles, of self-control particularly to prevent disease.

(4) Research in Ayurveda should be conducted by adequate personnel of the right type, proficient in Ayurveda, with the co-operation of modern Scientists.

SECTION X.

THE SCOPE OF AYURVEDA

200. Culture without comfort, beauty without luxury, machines without enslaving factories, concept of sacrifice through work (Yagna), science without worship of matter and self discipline through self control and prayer would develop in man his physical strength, vitality, his moral sense his intelligence, and his freedom from bondage and would lead him to the summit of his development. He becomes steady in mind—Sthitapragnaa. Brahma Bhoota—one with God—the ambition of all education in Ayurveda.

The Scope of Ayurveda is very vast and endless. (Anantapaaram.)

A. LAKSHMIPATHI.

20th July 1954.

THE HINDU IDEAL OF SELF-SACRIFICE

Self control (Indriya Jayam), self reliance (Aatma Viswaasa) and self sacrifice (Aatma yagna) are the cardinal principles which should guide a man for the fulfilment of the purpose of life. In fact, the Aatmayagna enjoins an individual to treat his daily routine of life as a great yajna or a life of devotion and dedication to the immortal Aatma.

The Atma yajna is the most sublime interpretation of the purpose in the life of a wise man. It is compared in every detail to the rituals and ceremonies that the officiating priests conduct in the performance of the yajna where animal sacrifice is offered to please the Gods. Here there is no shedding of the blood of the sacrificial goat. The main points of comparison are mentioned here :—

In the Aatmayajna, the Aatma as the performer is the yajamaana,—the master. The officiating priests are his several sense organs (Jnanendriyas) and also the organs of action (Karmendriyas). Agni—the sacrificial fire—is the Tapas or concentration, meditation and devotion. Anger is the sacrificial goat and it must be burnt with the clarified butter—namely—the desires. The period of Deeksha—duration of observance—is from birth to death without break, that is, the whole life time of the individual.

Whatever he eats and drinks to sustain life is the sacrificial food and soma juice. The wisdom that dawns as a result of such dedicated life shines in him with full effulgence. Such a noble life of dedication is rightly compared to the Satrayaga of the Kings, where Rishis officiated as priests and in which every earthly possession of the performer (Sarvam) was given away in charity.

We give below the text of Aatma Yajna.

तस्यैव विदुषो यज्ञस्यात्मा-यजमानः, श्रद्धा पत्नी शरीरमिध्मम्-
उरुर्वेदलोमानि बहिर्वेदः शिक्षा हृदयं यूपः काम आज्यं मन्युः पशु-
स्तपोऽग्निदमनमयिता दक्षिणा वाक् होता प्राण उद्गाता चक्षुर-
ध्वर्युर्मनो ब्रह्म श्रोत्रमग्निं यावद्ध्रियते स दीक्षा यदश्नाति तद्हविः
यत्पिबति तदस्य सोमपानम् इत्यादि ।

Aatmyajnam.

Tasyaivam Vidusho Yajnyasyaatmaa-Yajamaanah
Sraddhaa, patnee-Sareeramidhmam-Urovedirlomani
Barhir Vedah, Sikhaa--Haridayam yoopah Kaama
Aajyam Manyuh Pasustapo, Agni Damassamayitaa
Dakshinaa Vaak; Hotaa Praana — Uadgaata.
Chakshuradhwaryur Manobrahma Srotram Agni
Dyaavaddhriyate Sa deeksha. — Yad Asnaati Tad
Havih, Yat Pibati Tadasya Soma Paamam etc.

The same idea of sacrifice of the food, which a man eats as a homa into the internal fire is expressed by Charaka in the following slokas.

हिताभिर्जुहुयान्नित्यमन्तराग्निं समाहितः ।

अन्नपानं समिद्धिर्ना मात्राकालौ विचारयन् ॥ चरक.

(Sootra 27—343.)

Every man, who keeps in his mind, the proper measures of his food (Maatra) and the time (Kaala), should every day (Nityam) perform the sacrifice (Jahooyaat) or homa, with concentrated attention by making use of the fuel (samiddbhih), namely, the food in the form of cooked rice, and ghee and milk etc., (Annapaana) suitable to his own constitution.

षड्त्रिंशत् सहस्राणि रात्रीणां हितमोजनं ।

जीवत्यनातुरो जन्तुर्जितात्मा संमतः सताम् ॥ चरक.

आत्म यज्ञम्—

3—46.

One who has self control and takes his food in the above manner lives a happy life without any disease thirty-six thousand days (100 years) respected by all."

CHAPTER X**AYURVEDA IN THE ANDHRA STATE**

*"To-day, there is no doubt, that the Star of Ayurveda is rising higher and higher in the firmament of Modern Culture." **

What is Ayurveda ?

1. Ayurveda literally means the Science of Life. In this science, everything that makes life happy and unhappy (Sukhaa-Sukham), everything that makes a life beneficial to others or injurious (Hitaahitam—Social Medicine) and all that which helps us to know the duration of any life (Maanam), not only of man but of every living creature, is included in the Scope of Ayurveda. Ayurveda thus deals not merely with the medical science, but also with the social, ethical, intellectual and spiritual life of man. Ayurveda represents a beautiful blending of the accuracy of science and the sublimity of philosophy, poetry and art. Europe and America are just now beginning to appreciate the necessity of the medical student knowing the importance of poetry, art, philosophy and humanities, in addition to the scientific attitude that he should develop. The World Medical Education Conference held at London recently stressed on the Importance of this subject—see British Medical Journal, August 1953,

Ayurveda is a very Ancient Science.

2. The Thri-dhaatus are mentioned in the Rig Veda. The changing conditions of time and space, that is, the environments of man have a great influence on his life, his health and disease and so the science of Ayurveda also undergoes changes with the growth of knowledge by the

* Dr. B. Pattabhi Seetharamiah, H. E, the Governor of Madhya Pradesh—letter to the author, dated 14th August, 1953

advance of time. All aids, which help to protect the life of man, whether the knowledge is old or new are included in Ayurveda.

The Thri-dhaatu Theory.

3. It must be recognised that the natural elements of the air, sun, moon have a great influence upon man and his environments. In their normal condition, elements are represented in Ayurveda as Sarma (i. e. equilibrium of Thri-dhaatus, Vayu, Pitta and Kapha). They are the supporters of the body in the normal state and destroyers in the abnormal state. Vaayu represents in the human body the life and the nervous mechanism. Pitta represents the Sun—the Agni-fire—the heating and digestive mechanism and Kapha—the moon—the cooling and lubricating mechanism and water. Vaayu is predominated by Rajas—activity, Pitta by Satwa—harmony and Kapha by Tamas—inertia. They are represented in the Hindu Theology as the Trinity of Brahma, Vishnu and Siva. Vaayu is considered the most important of them and it is described as representing all the gods in one as Yama, Prajapathi, Viswakarma and Viswaroopa—"Vaayureva Bhagavaan" (Charaka Sutra, Chapter 12). Vaayu is described in the Upanishads as Pratyaksham Brahma—i. e. directly visible creator.

Namaste Vayo Twameva Pratyaksham Brahmaasi.

Ayurveda is thus the mirror of the Indian Culture.

The Thri-dosha Theory.

4. The Thri-dhaatus are called Thri-doshas, when they are vitiated.

The Thri-dosha Theory explains the causes, symptoms and treatment of disease. Most of the treatment of disease in

Ayurveda is based upon this theory. This is the fundamental difference between Ayurveda and Modern Medicine. Treatment in Ayurveda means bringing about the harmony of the Thri-doshas. This is an art, which has to be learnt and practised with great skill.

5. Secondly, Ayurveda is essentially an Aadhyaatmika science. The spiritual basis is the most important. The object of the study of Ayurveda is the harmonious attainment of the four values or aspirations of life, namely, Dharma—Virtu, Artha—Prosperity, Kaama—satisfaction of desires and Moksha—Salvation or self-realisation, Modern Medicine, on the other hand, deals mostly with the material body and therefore its scope is very limited.

The Thri-dosha Theory is, as it were, the soul of Ayurveda. If the soul is lost, the body becomes useless.

History of Ayurveda in the Andhra State.

6. The History of Ayurveda in the Andhra State may be divided into 3 periods,

(1) The Early Period—The Pre-Krishnadevaroya period upto 1500 A. D.

(2) The Middle Period—The Post Krishnadevaroya period from 1500 to 1750.

(3) The Modern Period—From 1750 upto date.

The *Early Period*—The Pre-Krishnadevaroya period upto 1500 A. D.

7. Mention is made in the Vedas, in the Ayitaraya Brahmanas of the Andhras. The Vedas are pre-historic and their age is not yet determined. There are references to Andhra desa and to Ayurveda in the Smritis, puranas, histories, stories, folk songs from time immemorial. In the Mahabharata, there is

a reference to the Andhra country and to Ayurveda. Whereas in the North at Benares—Dhanavanthari was teaching his students,—Susruta and others—Ayurveda giving importance to Surgery and whereas the Atreya Sampradaaya was followed at Takshasila giving importance to general medical treatment through the use of herbs, Siddha Naagaarjuna in the Andhra country founded his university at Amaravati in the Andhra Desa, giving importance to Rasachikitsa (treatment by mercurials) in the early years before christian era. Naagaarjunakonda—A hill named after Naagaarjuna is now identified near Macherla in Guntur district on the banks of the Krishna river. We find here the remains of an old University which was recently excavated. It appears that this Naagaarjuna was also the founder of the Mahaayaana cult of Buddhism. He extended this cult far beyond the boundaries of India and we now find the remains of a University at Amaraavati in Andhradesa. It is also believed that Naagaarjuna spent his later days at Sreesailam, in Kurnool district.

Method of commuting other metals into Gold.

8. "*Siddhe Rase Karishyaami, Nirdaaridriya midam Jagat*"

I shall make the world free from poverty perfecting mercury and converting it into Gold.

So said, Siddha Naagaarjuna. He is reputed to have succeeded in converting mercury into gold. This method is still current secretly in the traditional manner among Siddhas or Sadhu-hermits in this country. In the year 1940 in the month of Chitra (March and April), Rasaayanaachaarya "Krishnapaal Sastry, a Vaidya of Northern India converted 200 tolas of mercury into gold by adding to it one tola of a powder in the presence of Jugalkishore Birla of Delhi and Mahadev Desai, Secretary of Mahaatma Gandhi at Rushikesh near Haridwar. He heated the mixture for half an hour and produced one

hundred and twenty tolas of gold which was valued at Rs. 7,500 at that time and it was handed over to Sree Birla for charitable purposes. There is an inscription to this effect in the Yagna saala inscribed in the wall in stone at the 'Birla Mandir' New Delhi.

Gold may be produced out of Copper also See Darsanas in Telugu page 2. In the year 1944, one Sadhu converted a piece of copper into gold in the presence of Sri Ayurveda Bhishak, Kastoori Sivasanakaram Garu of Bheemavaram, West Godawari District, and gave it to him. The Vaidya sold the piece of gold to a goldsmith for Rs 12/-, just to find out whether it was truly gold and he then felt sorry for having sold that valuable token of the achievements of Hindu Chemistry—See Darsanas in Telugu by the author. During the period of Saatavaahanas, the Andhra country extended its boundaries upto Paataleputra in the North and Sind in the West The cultures of North and South India got mixed up during that period.

It was stated in Rasaratnaakara attributed to Naagaarjuna as follows :—

*Dwaadasaanicha Varshaani
Mahaakleso Krito Mayaa
Yadi Tushnosi Me Devee
Sarvadaa Bhakta Vatsale
Durlabham Trishu Lokeshu
Rasa baddham Dadaswa me,*

*Meaning :—*O Goddess, I have worked hard for twelve years, You always love your devotees. If you are satisfied with my work, bestow upon me, the art of fixing mercury, which is the most difficult in the three worlds. This shows that there existed in those days, the science of chemistry, which could be studied for 12 years. Chemistry of the mercurials—

Rasavaada—should have been very much in practice during the 4 or 5th centuries after Christ.

From a quotation from Kuttanee matha by Damodara Gupta (sloka 12), we may presume that Rasavaada or Dhaatuvaada (i.e.) the theory and practice of mercurial chemistry already earned some disrepute by the 8th century A.D.

“Paḍavedushu yatra Dhaatuvaaditwam” Damodara Gupta was the minister of Jayaneeda, the King of Kashmir (779-813 A.D.)—Introduction to Raaja Tarangini by Stein.

Rasa Saastra is not merely for Converting baser metals
into Gold,

Nacha Rasa Saastram

Dhaatu Vaadaardha meva, Iti

Mantavyam.

Deha Dwaara-Mukti Reva

Parama Prayojanatwaat.

Rasavaada is not merely for the purpose of converting baser metals into gold. Its chief object is to make the body free from disease, old age and fear of death, so as to attain the Moksha through this body.

In 814 A.D., in the reign of Nrupottunga Mahaaraaja of the family of Raashtra Kootaas, a Jain author, by name, Ugraaditya published an Ayurvedic work called Kalyaana Kaarakam. It is said in that work. that 39 books of great Ayurvedic Scholars were consulted in the preparation of that work. The was recently published by the All-India Ayurveda Mahamandal, Mahalakshmi Market, New Delhi. It is stated in that book that. at a Conference, meat eating was condemned by all. (See Dhanvanthari, dated 14th July 1924). In the books,

that are available in the Oriental Manuscript Library, we have books called "Vaidya Grandham" (i.e.) medical book, which contain the diaries of the Vaidyas beginning from the prayer to Vigneswara, the horoscopes of the families, some portions from Nighantus (medical dictionaries) to some secret remedies treasured carefully by the family.

Navanaadha Charitra, a work of a Chemist of the 9th century deals with the secrets of the creation of life and of the identity between the atomic Jeevaatma (Microcosm) with the Macrocosm. It also deals with the conversion of one inert matter into another inert matter.

There were probably many Naagaarjunas.

Among the teachers of Rasaayana saastra of those days were Govinda Bhikshu, Somadeva, Ramachandra, Swacchanda Bhairava and others. They are more or less contemporaries—Govinda Bhikshu described the qualities of Buddha. He lived prior to 9th and 10th centuries A D. From this, it is clear that the followers of Buddha took interest in Rasavaada—Alchemy.

In the 11th Century, a Mohammedan Historian Alburuni, a contemporary of Mahammad of Ghazni came to India and described the Alchemical knowledge of the Hindus.

In the 14th century, at the time of Bukkaraaya, Maadhavaachaarya described Rasavaada as an independent Darsana in his book, Sarvadarsana Saara Samgraha. He mentioned among other works Rasaarava, Raseswara, Siddhaanta, Rasa Hridaya and quoted extensively from them.

The etymology of Paarada (Mercury) is given as follows. Paaram—Dadaati—Iti Paaradam. Paaram means the other end (i.e.) Moksha. It also shows that in the 14th century, Mercury

was an ingredient of medicines used in the treatment of diseases showing the intimate relation between chemistry and medicine throughout India.

This tradition spread to Tibet and China. It may also be said that Siddha Naagaarjuna might have been the propagator of the Siddha system now prevalent in the South,

Chandraprabhaachaarya—a disciple of Jayaprabhachaarya, who was a disciple of Naagarjuna installed a statue in stone of Buddha, before 2nd century B.C. according to the historians. The statue and an inscription on the pedestal were found in the Jaggayyapeta Stoopas in the Krishna district. The inscription gives a clue to the age of Naagaarjuna that he should be placed before 2nd century B.C.

Upto 12th to 13th century. Nityanaadha Siddha, Navanaadha Siddha and Revana Siddha and other Siddhas wrote works on Rasaayana Sastra. Many of the manuscripts relating to the works of these Siddhas are in the Oriental Manuscript Library, Madras, without being catalogued.

A portion of Rasaratnaakara by Nityanaadha Siddha was published with a telugu commentary. Many recipes that are now used in Andhra desa are found in this work.

In this work are also found descriptions of Sri Sailam and of the monasteries and other educational institutions in the neighbourhood of Sri Sailam in the Kurnool district. Chemistry seems to have been taught here in a practical way. I have seen the remains of the ancient Rasa Saalas. A portion of Rasaratnaakaram is also available in beautiful Telugu poetry and this is not yet published.

II

Middle Period.

Upto the time of Kristnadevaroya (1510-1530 A. D.) ancient medical works were generally in the Sanskrit language, with a few exceptions. Charaka Susruta and Maadhava Nidaana were also probably studied in the Andhra desa regularly as text books. Along with these, Basavarajeeya and Vaidya Chintaamani which abound in mercurial preparations might have been studied in some form or other in the Andhra State. Vaagbhata was known in the Andhra country as Baahata and his book was translated in part into Telugu verse. I have seen some Vaidyas quoting from this work. This work is not yet printed.

In this period, works like Yogaratnaakara, Sadvaidya Jeevanam (Lolamba Rajeeyam), Chikitsaa Saara by Gopaldass and other Sanskrit works were written in the Andhra desa and they attained great reputation in Northern India. They were studied there also as text books. Saarangadhara Sambita a popular medical work (1350 A.D.) was probably written by an Andhra and it was studied throughout India.

The special feature of the Andhra tradition in Ayurveda was the Ashta Sthaana Pareeksha—the examination of the eight factors, namely, (1) Pulse, (2) Tongue, (3) Urine, (4) Faces, (5) Eyes, (6) Speech, (7) Nails and (8) Aakriti—the general appearance of the patient. These were very carefully examined and the relative proportions of Vaata, Pitta and Kapha were accurately assessed in the diagnosis of disease before treating the patient.

Diagnosis by testing the pulse is not found in the works of Charaka, Susruta, Vaagbhata and other Northern Indian Medical books. This tradition was peculiar to South India. It was probably propagated through the Siddha System. The

Siddha tradition might have had its origin in Hata Yoga, which treats of Kundalini Yoga, and which describes Ida, Pingala and Sushumna Naadees and the Shat Chakras.

Accurate knowledge of the pulse is a delicate art like playing on the Veena, which can be acquired only by those who have a taste for it. One might be an expert in Veena though illiterate. Similarly, knowledge of the pulse may be acquired by tradition, handed down to the disciple from generation to generation. All the medical works in the Telugu language begin with the testing of the pulse and it may therefore safely be said that the Naadivignaana had its source in the Andhra country. It would appear that this knowledge of Naadi spread from Andhra to Northern India only after 13 and 14 centuries. Even now, there are a few in the Andhra desa who by examining the pulse can foretell curable and incurable diseases with a certain amount of precision. This requires a special training under a guru, in order to acquire this extra-ordinary power by direct contact with the teacher and extensive practice and not acquired so much by reading books.

EDICTS RELATING TO AYURVEDA IN ANDHRA DESA

1. *Malakaapuram Edict.*

There is a stone edict at Malakaapuram about 6 miles from Mangalagiri—Guntur District. It is 10 to 12 feet high. This was promulgated by Ganapati Deva of the Kaakateeya family in the middle of the 11th century. From this, we learn that two puttis (about 20 acres of land) was granted to each of the Maternity and General Hospitals.

Prasootyaarogya Saalaayaam

Pratyakam Puttikaa Dwayam.

I have seen this edict. It looks quite new, engraved on a huge smooth black granite stone.

2. Akkalapoodi Edict,

The edict belongs to the year 1368 A.D. This was promulgated at Akkalapoodi by Sri Raaja Mummidi Naayaka who was the ruler of Korukonda, near Rajamahendravaram in East Godavari District. This edict records the grant of the Village to a Vaidya Kaasibhatta by name.

3. Kalavacheru Edict,

This edict shows that a Village called Kalavacheru, which is now known as Annavaram, was given as a free gift to a Vaidya by name Parahitaachaarya. He saw a serpent suffering from pain on account of a bone stuck up between the jaws. He removed the bone and relieved its suffering. A big Ayurvedic book called Parahita Sambhita still remains unpublished. I learn that Vaavilla Ramaswami Sastri and Sons of Madras are now publishing it in parts.

[For more particulars see XXVII in the Telugu report,]

Ayurvedic Gurukulas in Andhra Desa.

After the decline of the Buddhist Universities in the Andhra Desa, Ayurveda was taught in the Gurukulas which existed in the nooks and corners of the country, in the Asramas and Agraharams along with the Vedas, Vedaangaas and Smrities in some families. The Vaidyas trained in these gurukulas were rendering medical services in the country, all these centuries. In all these Gurukulas, Sanskrit appears to have had great importance.

However, we find in Nenne Choda's Kumaarasambhavam (11th century A.D.) great details of the hygienic conduct of the individual in simple Telugu verse. This shows that the customs

and habits, that are now followed in the country had their foundations laid down before the 11th century A. D. (See Telugu report.)

After Krisnadevaroya, the composition of medical works in Telugu verse appears to have received a stimulus. Raayasam Perayya in his book Vaidyasaaram which was written in Telugu poetry, says "Not even one in a hundred can read Sanskrit, whereas every one can read Telugu".

He lived in a Village called Irlapaadu, near Kondaveedu in Guntur District. He was a Niyogi Brahmin and a Village Karnam. By this time, it would appear that Raasaratna Samu-chayam, Chintaamani, Basavaraajeeyam, Rasa Ratnakaram were much in use in the Andhra country. Trimalla, an inhabitant of Kondaveedu, wrote a book called Brihat Yogaratnaakaram in Sanskrit. Trimalla Bhatta published his Yoga Tarangini. Devulapalli Venkata Narasamantri composed in Telugu verse a translation of Chintamani of Indrakanthan Vallabhaacharya. The Vaidyas of the last generation, in the coastal districts were repeating by heart the Telugu verse from Sarabharajeeya. This book contains many details of the descriptions of Syphilis and its treatment. It is therefore clear that this book was composed after the advent of Europeans into India. This may be placed between 1700 and 1800 A. D. In addition to the above books. Lolamba Rajeeyam, Chaarucharya of Bhojakali, Rasapradeepika of Mudumbi Venkatacharya, Bhesha Kalpam of Chilakamarri Venkatacharya, Shadrasa Nighantu, Varnoushadi Varga of

Amaran, Dhanyanthari, Nighantu, Satasloki in Sanskrit, Sata-sloki (in Telugu verse) which was dedicated to the goddess Tayaaramma at Poonamalli were read as Text Books by Vaidyas in the Gurukulas.

III

Modern Period.

After the introduction of printing, many of the ancient works in Ayurveda in Sanskrit were published. From the year 1900 A.D., Ayurveda was taught, integrated with modern medicine wherever possible. Sri Vaidyaratna Pandit D. Gopalacharyulu Garu established the Madras Ayurvedic College in the year 1901. After his demise in the year 1920, I continued to conduct the college. Private Colleges recognised by the Madras Government were also working at Vijayawada and Guntur. Pandit Taaranath started a Gurukula called Premaasramam at Tungabhadra and produced many Vaidyas called Vaidyagurus. This institution was subsequently converted into the Ayurvedic College at Bellary.

The All-India Ayurveda Mahamandali which was started about the beginning of this century has been conducting examinations in the Andhra country in 3 grades, namely, Bhishak, Visaarada and Aachaarya. Owing to the persistent and praiseworthy efforts of the late Sri Prativadi Bhayankaram

Krishnaamacharu Garu of Vijayaroy, who worked at Vijayawaada, the Andhra Ayurveda Parishat has been conducting examinations in Telugu from which about 1000 Vaidyas with the title of Vaidya Vidwan were produced. In addition to all these, there are hereditary Vaidyas training their disciples or children at the rate of one or two in every village.

In the year 1925, during the time of Raja Ramaaraayanimgar as Chief Minister of Madras the School of Indian Medicine was started at Madras and about 1200 L.I.Ms. were produced from that institution. During the Prakasam Ministry at Madras in the year 1946, this school was upgraded into the College of Indigenous Medicine from which about 75 graduates with the degree of G.C.I.M. have come out. There are also the products of the Colleges of Modern Medicine at Vizagapatam, Madras and Guntur, who study Allopathic Medicine. These Colleges produce about 250 graduates of M.B.B.S. grade annually. The number of Allopathic Doctors according to the Madras Medical Register upto 21st July 1954 was 10,337 *. Of these, about 5,000 may be Andhras.

During the time of the Prakasam Ministry at Madras (1946-47) the health ministress, Srimathi Mrs. Rukmani Lakshmipathi Garu introduced a training course of six months for improving the knowledge of Village Vaidyas and the

* Letter dated 28th July, 1954—Registrar, Madras

examinations are held by the Government twice a year under the scheme. About one thousand Ayurvedic Practitioners were trained and they are rendering rural medical service. They were trained and examined in First Aid, Midwifery, Child Welfare and the rural sanitation etc., and are only examined but not trained in Ayurveda. This is not enough. So, another examination was introduced by All-India Ayurveda Vidyaapeetha, in the name of "Prajā Vaidya examination". These examinations are also conducted every six months from March 1951. The syllabus is the same as that of the Government Village Vaidya Examinations—see chapter XXXI.

Our Duty.

For the development of Ayurveda a number of Colleges, Schools and Research Institutions may be opened extensively. But, on account of the glamour for Western medicines created by extensive advertisements of the latest type flooding into the market every day, Ayurveda is getting adulterated rapidly. It is very likely that such mixed practice may be greatly detrimental to the fundamental theories of Ayurveda. Further, the more Western medicine spreads in the country, the more is the degeneration of the standards of health and the moral stamina of the people. The habits of taking tea and coffee even without washing the teeth, the unlimited smoking of cigarettes, untimely meals and delicacy of health due to easy going life, all these vices are increasing enormously.

Cleaning teeth immediately after getting up from bed, regular physical exercises, oil baths, morning baths, taking food at regular times, control of the senses and such other good conduct inculcating healthy habits are lost and the health of the people has degenerated. Diseases due to enjoyment of sensual pleasures such as heart disease, diabetes, and high blood pressure resulting from mental anxiety are increasing. The teaching of Ayurveda is very necessary in order to make the people follow the rules of good conduct, which promotes the positive health of the nation, by popularising the food and conduct most suitable to our climate. Therefore, instead of allowing the mere expansion of the knowledge of Western Medicine, we should integrate the Ayurvedic methods with the modern scientific methods and we should see that "Astangaayurveda" which is complete in all branches should be encouraged throughout the country.

There are already many Gurukulas in the Andhra country where Ayurveda is taught in the traditional manner. These institutions should be encouraged and whatever is found to be good in the modern medical science should also be taught to them. There should be at least one Vaidya in every Village recognised by the Government and medical help should reach the remotest corners through him. To see to this is the duty of the Government. The Ayurvedic physician for his own part should not take to the practice of Ayurveda as a profit making profession but the practice of Ayurveda should be a matter of charity. This is the Ayurvedic tradition. It is the duty of the people at the same time to support the Vaidya. I hope that our Doctors, Vaidyas, the people and their representatives in the assembly and the Government will co-operate with each other in bringing medical relief to rural population.

The Present Position.

The number of villages in the Andhra State is 15,420. The population of the Andhra State is 2 crores and five lakhs in 1953. At the rate of one Vaidya for every one thousand of population, we require 20,500 Vaidyas. I have called for statements from the Collectors of the 11 districts to furnish us with the actual lists of Vaidyas that are now practising in the Villages. We know that most of them are ill-equipped. But, I would like to know, who are all our Comrades in the profession, who are serving the people according to their capacity, so that, we may think of the proper measures to improve their knowledge and status. The first item in the terms of reference of our committee is on the appropriate measures for giving a definite status to the Ayurvedic System in the State.

Status of the Ayurvedic Physicians.

The status of the Ayurvedic System depends upon the status of the Ayurvedic Physician. The status of the Ayurvedic Physician itself depends largely upon the knowledge and efficiency of the physician himself. We know that both these are not satisfactory at present. But, we need not get despondent about it. I quoted, in the early part of the address, a statement from the letter of His Excellency Dr. Pattabhi Seetharamiah Garu. He is not an ordinary person to please. He is a great critic. It is generally very hard to get an appreciation from him. The appreciation from him means that there is some great merit in Ayurveda. As against the appreciation, there are many who decry Ayurveda and say that it is all unscientific and that Ayurveda is a heap of superstitions.

The status of Ayurveda will rise only when Ayurveda is recognised from the international standpoint.

International Recognition for Ayurveda.

India is a member of the World Health Organisation. An influential member also. As such, India has committed herself to some obligations and some responsibilities. A minimum standard of general education in certain basic subjects has to be maintained, if international recognition is desired. The system of modern medicine (i.e.). European or American Medicine is recognised in India and it is taught in our Medical Schools and Colleges. Similarly, Ayurveda or the Indian Medicine has to be recognised by W.H.O. It should be taught in the Schools and Colleges in Europe and America. This is not impossible. You now find many centres in those countries where the principles of Hindu Religion are taught by the Ramakrishna Mission, after the advent of Swami Vivekananda. The Introduction of Ayurveda into those continents is much easier than the introduction of the Hindu Religion, because of its utility, materially, if not morally and spiritually.

I may say that the appreciation of Ayurveda by them has already begun. The Harvard University sent me a small cheque along with their letter dated 16th August 1949, from the Department of the School of Medicine and Public Health, stating that the cheque was a small token of their high appreciation of the Text Book of Ayurveda, which you know. I had published in English. Five or six sets of these books are now available in the libraries of Europe and America and they are

read with great interest by some scholars. These great Scholars and Scientists who know no boundaries of race and place are now corresponding with me and they appreciate the viewpoints of Ayurveda. In fact, an American Doctor of Medicine with very high qualifications (Capt. Walter Seth Kipnis, M.D.) visited India after reading these books and paid a visit to Dr. Rajan, when he was the Minister in-charge of Public Health. Finding these books in Dr. Rajan's Library, he asked him whether he read these books. Dr. Rajan honestly said that he had no time to read being overburdened with routine official work. I was also present at that time. The American Doctor requested Dr. Rajan to send exchange professors to America to popularise Ayurveda in that country.

Recently, this Text Book of Ayurveda was quoted by Professor John F. Fulton, O.B.E.M.D., F.R.C.P. of Yale University, who spoke highly appreciating the system of teaching of Ayurveda in Ancient India, in his address at the Plenary session of the First World Conference on Medical Education held at London on 24th August 1953. This was reported in the British Medical Journal of 29th August 1953.

I am now retired and I do not need that my own reputation should now be enhanced, but I desire that Ayurveda should serve humanity (Lokahitaartham), as desired by the great Rishis.

I wish to state emphatically that the status of Ayurveda will depend largely upon the international recognition of The Science of Ayurveda and the valuable principles and treasures contained in Ayurveda. For instance, the maintenance of positive Health is advocated by a rigorous discipline of man in the hygienic

principles from childhood by developing self control, self reliance and self-sacrifice. To the American people, who are now steeped in great prosperity and living the luxurious press-button life making electricity do most of the work of the human hands and legs, the teaching of these principles of Ayurveda, which advocate self control and self sacrifice will be in great demand. I have dealt with this subject in another place.

Conclusion.

The status of Ayurveda in the Andhra State will be assured only when Ayurveda is recognised internationally. The short term plan of bestowing some highly paid jobs on some individuals and the honouring of some Ayurvedic pandits may also help temporarily to raise the status of the Ayurvedic system in the Andhra State. But, in the end, the final test of Ayurveda lies in its efficiency in the art of curing diseases and of maintaining the positive health of the nation physically and mentally

Lokaah Samastaah

Sukhino Bhavantu.

Vijayawada,

12th. July 1954.

(Sd) A. LAKSHMI PATHI.

CHRONOLOGICAL TABLE OF AYURVEDA

King Pridhu	... 4896 B. C.
Vedas	... 4000 B. C.
Daksha	... 3889 B. C.
Viswamitra	... 3814 B. C.
Ikswaku	... 3798 B. C.
Maandhaata	... 3488 B. C.
Dushyanta	... 3405 B. C.
Harischandra	... 3169 B. C.
Sagara	... 2951 B. C.
Bhageeradha	... 2833 B. C.
Bharadhwaja	} 2500 B.C.
Atreya	
Agnivesa	
Bhela	
Jatookarna	
Paraasara	
Haareeta	}
Kshaarapaani	

Raghu	... 2225 B. C.
Viswaamitra	} 2158 B.C.
Dasaradha	
Dhanvanthari	} 2150 B.C.
Susruta	
Bhoja	
Bhaaluka	
Karaveerya	
Vaitarani	}
Aupadhenava	

Raama ... 2124 B.C.
Sri Krishna ... 1456 B.G.

Mahaabhaarata War
Paandawas and
Kouravas } 1416 B.C.

Buddha—Nirvana ... 554 B.C.

Bimbisara
Jeevaka
Bikshu Atreya } 550 B.C.

Paanini
Naagaarjuna
Asoka } 300—200 B. C.

Charaka ... 100 A. D.

Bower
Manuscripts
Dridhabala } 400 to 500 A. D.

Vriddha Vaagbhata ... 800 A. D.

Ashtaanga Sangraha ... 800 A. D.

Maadhavakara ... 700 A. D.

Vaagbhata— ... 900 A. D.

Ashtaanga Hridaya

Vrindka ... 900 to
1000 A. D.

HISTORY of AAYURVEDA | Chronological table ayurveda 595

Chakrapaani	...	1000 to
		1100 A. D.
Dalhana	...	1000 to
		1100 A. D.
Malakaapuram Edict	...	1000 to
		1100 A. D.
Arunadatta		1200 to
Vijayarakshitaa		1300 A. D.
Sreekantha		
Saarangadhara	...	1350—1400 A. D.
Akkalapudi Edict	...	1368 A. D.
Chikitsaa Saaram by:		
Gopal Dass	...	1350—1500 A. D.
American Discovered	...	1402 A. D.
Kalayacheru Edict	...	1423 A. D.
Vascodigama came to India		1498. A. D.
Vangaseva		
Sivadoss		1500 A. D.
Krishnadevaraaya	...	1510 to
		1530 A. D.
Bhaava Misra	...	1550 A. D.
Indrakanta Vallabhendrudu		1500 to
		1600 A. D.
(Chintaamani)		
Basavaraaja	...	1600 to
		1700 A. D.
Sarabharaja	...	1700 to
		1800 A. D.

Pandit D. Gopalcharlu—1872-1920.

Foundation of Ayurvedic College, Madras—1901.

All-India Ayurveda Mahamandal—1907.

All-India Ayurveda Vidyapeetha—1912.

Andhra Vaidya Mandali—1917.

Oosman Committee Report, Madras—1923.

Government School of Indian Medicine, Madras—6—1—1925

Text-Book of Ayurveda—(Ayurveda Siksha)—1944.

Government College of Indian medicine, Madras—1947.

Village Vaidya Training Scheme, Madras—1947.

Chopra Committee—New Delhi—Report—1948.

Birth of the Andhra State—1—10—1953.

**Expert Committee for Popularisation of Ayurveda Con-
stituted—30—6—1954.**

A. LAKSHMI PATHI

Vijayawada,

12th July 1954.

Adopted from D. N. Banerjee—Text-Book of Pathology 1941.

INDEX

- Aacharyas 187**
Aadhunika Yuga 71
Aalambayana Samhita 289
Aalwars 185
Aanandagiri 148
Aanandateertha 189
Aandal 186
Aandira Ayurvedic Conference 348
Aangirasa 59
Aangla Yuga 257
Aaramalankarana 382
Aaramadhipathies 363
Aaranyakas 29
Aarogyamanjari 290
Aaryans 72
Aarya Samaj 234
Aarya Yuga 73
Aashramas 21
Aatma 17
Ayurveda
 an Upaveda 259
 and the Vedas 275
 in Bauddha Yuga 133
 in Bhakti Yuga 214
 in the Epics 124
 in the Smritis 103
 Institutions of 329
 Maha mandal
 Medical Ethics in 350
- Scientific out look of 2**
The top Science 69
The Spirit of 349
Teachers of 59
Traditional Genesis of 278
Abamita Theory 78
Abdul Aq 202
Abdul Khader Badowni 167
Abdur Rahim Khan Khana 200
Abhidana Chintamani 326
Abul Fazl 166
Agasthya 78
Agnipurana 143
Agai Vesa Samhita 287
Aithereya Brahmana 92
Akbar the age of 166
Alberuni 155
Alexander 92
Alfazaree 155
Allopanishad 167
Almanes, Hindu 79
Amaradas 169
Amaravati, University
Amir Khusru 201
Anatman 17
Anatomical references 261
Annie Beasant Mrs. 115
Angakalas 241
Angakor Vat 247

Anjana Nidana 282

Annam 15

Antaragriha 442

Aravinda Ghose 227

Arjuna, 17

Artha Sastra 49

Asampragnata Samadhi 163

Astadhyayi 48

Ashtanga Hridaya 150

Ashtanga Sangraha 150

Asoka 62

Atharvaveda 47

List of diseases in 47

Attri Samhita 283

Atula 59

Aum 24

Aupadhenava Tantra 284

Avagarshana 295

Avanti 125

Avicenna 34

B

Bahyagriha 442

Babhu 85

Bacteriology 266

Bahlikas 47

Baluchistan 79

Basavarazu, Kotturu 325

Basaveswara 183

Basu

Baudhayuga 70

Benares 58

Bezwada 348

Bhagavata religion 127

Bhagyavatas 120

Bhaluki Tantra 282

Bharadwaja 279

Bhava Misra 323

Bhaskara Bhatta 324

Bhagavadgitagita 105

Bhakti Yoga 71

Bhandarkar R. C. 48

Bhaitaraka Harischandra 264

Bhela Samhita 282

Bheshaja Vidya 363

Bhikshus 57

Bhishma 121

Bhoja Samhita 285

Bhrihadaranyaka Upanishad 384

Bhudurgam 471

Bhavanewar 147

Bible 177

Bimbisara 54

Bose Sir J. C. 238

Brahman 15

Brahma Gupta 155

Brahma putra 116

Brahma Samaj 233

Brahma Siddhanta 155

Brahma Vaiyarta Purana 142

Brahu 79

Brihat Samhita 115

aspati Samhita 289

British Pharmacopoeia 1
 Buddha 53
 Buddhism 125
 Decline of 131
 Bukka 207
 Caliphate 314
 Cardova 314
 Cinevali 75
 Civic Administration 415
 Civilisation, centra 74
 Chandogya 126
 Charvakas 127
 Chaitanya 195
 Chakrapani 284
 Chaudragupta 49
 Charaka 4
 Charana Vyuha 260
 Chemical Laboratory 319
 Chenchaiiah Mr. P. 174
 Chenchu Ramaiah Garu
 Kompalli 270
 Chikitsasaram 226
 Chopra Lt. Col. R.N. 239
 Christianity Christian beliefs,
 fundamentals of 174
 Coioured Cotton 376
 Combodia 151
 Congress.
 Aims and Objects of 339
 Presidents of 340
 Indian National 345

Consciousness, the four states
 of 22

Crole M. R. 454

Cross grafting 376

D

Dadu 191

Dayabhaga 206

Dalhanacharya 128

Dandakaranya 92

Darsanas 18

Das, Avinash Chandra 71

Dasaradha 107

Dayanand Swami 235

Desamarga 429

Deva Suri 205

Dhanvantari Image of 59

Dharma 3

Dharma Sastras. 206

Dhritarastra 106

Diagnosis 299

Digambara 107

Dineshchandra Sen Dr. 206

Disinfectant recipe 380

Divani Aam 442

Divani Khas 442

Domingo Paez. 454

Drividians, descent of the 74

Dridhabala 282

Dronachary 449

Drugless treatment 5

Dugdhova 172

Dugdhva 172

Datt 473

Dymock 216

E

East India Company 247

Ecology 392

Economic botany 405

Education, mechanism of 23

Medical studies in
general 64

Round the Craft 240

Special for girls in
India 241

Embryology 297

Ends of life 22

Engraving and Seals 76

Epidemics, out breaks of 54

Eswara prasad 148

Evolution Theory 98

F

Fa-Hien 83

Faizi 166

Faith 180

Ferguson 453

Fruit and flower Untimely 377

G

Galava Tantra 285

Gargya Tantra 285

Gajaprushtam 434

Gananath Sen Kayiraj 293

Gandhi Mahatma 227

Ganges 84

Gayadasa 325

Ghosh Angirasa 126

Giri Vraja 116

Gita Govinda 205

Godavari 93

Godhole Sastri 263

Golden Age 121

Gopalacharlu 23

Gopal Das 326

Gopal Naik 201

Gopura Rakshita 284

Gotama Samhita 293

Gotra 95

Goutama Samhita 285

Govinda Bhagavat Pada
charya 315

Gramadhikar 416

Garmam 466

Grama marga 429

Green manure 370

Griffith 402

Gunaratna 388

Guru, Arjun 169

Govinda Singh 169

Teg Bahadur 169

H

Hadfield, Sir Robert 321

Hammira 399

Harappa 72

Hareeta Samhita 283

Harsha Vardhana 134

Harun At Rashid 314

Hastamatur 326

- Hastinapuri** 448
Havell E. B. 156
Hemachandra 205
Hemadri 97
Hindu Culture 14
 Dharma 208
 Genius 211
 Literature 204
 Valour 211
Hindusthan, F ederated sfates
 of 80
 political structure of 84
Hindusim, sociobhical basis
 of 221
Hiporeates 305
Hiranyagarbha 24
Hiranyakha Tantra 288
History of Ayurveda periods of
Hiven. Tlsang 65
Hoernle Dr. 295
Hoerutle Dr. 295
Hardinge Lord 329
Holy Bible 177
 Granth 171
 Spirit 175
Hospitals, 50
Ancient Indian 62
Benefits of establishing 313
Human figures 75
Human race, cradle of the 77
Hygiene 304

I
Ibin Osaiba 314

Ikshaka 105
Iliad 115
Imperial Unity 209
India, United and
 prosperous 208
 Hindu Dharma and
 greater 208
Individual soul, the four
 grades of 23
Indraprastha 449
Infection, rats as Carriers 50
Inter Course Commerical 77
Iqbal Md. 83
Islamic culture 152
Iswara 124
Ivans Sr. Joha 77

J
Jahangir 169
 Jainaism 129
Jai JJatacharya 313
Jaivarrman VII 151
Jaladurgam 453
Jalarasajnanam 383
Jallaluddin Rumi 165
Janaka 24
Jatukarna Samhita 282
Jiva 1, 5
Jayadeva 167 205
Jayaditya 65
Jayantipuram, Raja Saheb 361
Jeemita V.hana 206
Jeevaka 53
Jeevaka 289

Jesus 174
Jogendranath Sen, Kaviraj 6
Jones Sir William 392

K

Kankayana 286
Karalabhatta 286
Karla Tantra 286
Kasika Vritti 65
Kasyapa Samhita 288
Kaveri 84
Kabir 191
Kakshaputa Tantra 290
Kaladi 146
Kaliyuga 219
Kamandaka 102
Kanada 390
Kanchi 84
Kanishka 312
Kanyakumari 79
Kapila 59
Kapila Samhita 285
Kapila Vastu 125
Karaveerya 2 84
Karṇa, Law of 119
Karyan 128
Kalyayana 277
Kaumarabhritya Tantri 288
Kautilya 49
Keralaputra 436
Kasavachandrasen 234
Khagendramani Darpana 130
Khalsa 168
Khalifa Haroun 154

Kharanada Samhita 283
Kiratas 72
Kiranavali 391
Kirtikar Dr 238
Koman Dr. M. 331
Krishna 93
Krishna Athreya Samhita 286
Krishna 204
Krishnarao Dr. P. V. 296
Ksharapani Samhita 243
Kuchumera Tantram 29
Rullukabhattiyam 97
Kumara Sambhava 390
Kumarila Bhatta 147
Kunapa Jalam 393
Kurmaprushtam 438
Kushanas 93

L

Latyana Samhita 289
Lakshmipathi Dr. A. 329
Lalita Madhava 206
Lanchaster H, V, 420
Lisbon 455
Literature in mediaeval
India 200
Lolamba Rajeeyam 326
Lukis Sir Pardy 329
Luther Barbanks 397

M

Madhvacharya 207
Madhayanidana 325
Malati Madhava 184
Malyavan 109

- Manasara 412
 Mandavya Tantra 290
 Macdonell 48
 Madanapala 326
 Madhyoshtam 438
 Madhva 189
 Madura 78
 Magadha 48
 Magasthanes 93
 Magha Nakshatra 116
 Mahabharata 119
 Mahammadeeya Yuga 258
 Mahabalipuram 453
 Maha sankalpa 81
 Maha Vagga 53
 Maha Veera Vardha mana 126
 Mahendralal Sircar 406
 Malakapuram 327
 Malavya Pandit Madan
 Mohan 237
 Mandagalayana 52
 Manka 314
 Mantra Yoga 159
 Marriages, hypergamous 102
 Marshall Sir John 452
 Materia Medica 298
 Matsya Nyaya 101
 Matter 16
 Medical Conferences 306
 Registration 306
 Specialists 307
 Stores 50
 Studies Syllabus of 66
- Medicines, list of 52
 quality of 46
 Metallurgy, expert
 knowledge in 320
 Midwifery 304
 Milinda Panha 59
 Military equipment 106
 Minhal us Siraj 201
 Mirabai 200
 Mitakshara 206
 Mohenjodara 72
 Mohidden Sherif 238
 Mangolia 115
 Morewarbhatt 326
 Motwani Kewal 221
 Mowryan Empire 92
 Mubarak 167
 Mujavans 47
 Mukherjee Dr. G. N. 258
 Kaviraj M. K. 257
 Dr. Jadugopal 406
 Dr. Radhakumud 26
 Muller Prof 289
 Muthu Dr. 258
 Muzumdar Girija Prasanna 361
 N
 Naganrishtam 434
 Nagarjuna 93
 Konda 93
 Tantra 290
 Nalanda 40
 Na adeva 191
 Nanak 156

Narada 39
 Nayaka 416
 Nayanasekhara 326
 Nadkarni Dr. K. M. 238
 Nagaram 465
 Nanda Dynasty 92
 Nander 171
 Narahari 326
 Narayanarao Bhishawara D. 257
 Natesa Sastry Pandit K. G. 335
 National Renaissance 237
 Nathamuni 187
 Navaratnas 147
 Nawab shafe Uddow Ch. 330
 Nellora 92
 Nicolo 454
 Nimbapur 191
 Nimbarka 191
 Nimi Tantra 286
 Nirnayasiudu 97
 Neetisara 102
 Nurse 46
 Nurserwanjee Lowjee 248
 Nyayachandrika 325

○

Odyssey 115
 Omar 153
 Operations 300
 P
 Palakapya Samhita 292
 Panchala Tantra 291
 Pandya 78

48

Pataliputra 92
 Pataniala Samhita 290
 Pade, Sankarodaji Sastry 239
 Padmadatta Bhatta 206
 Padmapura 140
 Pahrli 77
 Pajlota 55
 Paloe botany 405
 Panchabhota Siddhanta 4
 Pancha Dravidas 84
 Pancha Goudas 84
 Pancha Tantra 205
 Parasara Sambita 282
 Paracelsus 318
 Parliament of Religions 110
 Pardhasardhi Misra 205
 Parthians 93
 Pattanam 405
 Pawrinika Yuga 71
 Paushkalavata 284
 Pennar 92
 Periapuranam 182
 Pharmacy 298
 Physician, Qualifications of 45
 Rules for the practice of 49
 Physiology 297
 Prana Panava 24
 Prabodha Chandrodhayam 146
 Practitioners classes of 49
 training 302
 Plants Cooling and heating
 reatment of 379
 wasting diseases in 387

Pole star 141
 Poorvasumdra 71
 Powrashaspa 172
 Prayers, the value of 159
 Pridhviraj 212
 Process of metabolism 264
 Pubbakachchayanda 59
 Pulasthyar 308
 Puranas 135
 Characteristics of 137
 History in the 139
 Permanent value of 144
 Pramanas in 137
 Short summaries of some, 140
 Yoga in 139
 Puratana Yuga 71
 Puram 465
 Puramarga 429
 Puri 465
 Parushardhas 308

Q

Quacks 307

R

Radhakrishna Cult 189
 Ragai Diseases 228
 Raghunandan Misra 207
 Raghu Vamsa 111
 Rajagriha 54
 Raja Marga 429

Raji Rama Mohan Roy 227
 Ramaksishna Paramahansa 227
 Raman Sir C. V. 238
 Ramana Maharshi 165
 Ramanand 191
 Ramianujacharya 187
 Ramayana 19
 Culture 105
 Ranade M. G. 213
 Rasaratnakara 325
 Rasaratnasamuchaya 322
 Raseswara Darsana 314
 Ravana 19
 Ravidas 200
 Ray Sir, P. C. 238
 Renukacharya 183
 Ritazes 314
 Rheed Henry 400
 Rhys Davida 51
 Rigveda 71
 Rucra 91
 Rupa Goswami 106

S

Saketa 58
 Samanta 416
 Sarangadhara 326
 Sarngadhara Pandhati 397
 Saripura 52
 Sayana 207
 Sakas 93

- Sambita Yuga 277**
Sanaka Samhita 289
Sanatana Dharma 81
Sanitary Regulation 51
Sangivani 124
Sanskrit Language, a unifying force 83
influence of 204
Saraswat Vilasam 97
Sastra Dipika 205
Saivism 127
Sankaracharya 148
San Thome 181
Salihotra Samhita 293
Samaveda 260
Samskara Chandrika 97
Saha M. N. Prof 238
Saktas 183
Sakuntalopakhyana 118
Satya Yuga 251
Seal Sir B. N. 238
Setti 54
Seed Bed 371
Seedless Fruit 377
Senses in Plants 365
Sermon on the Mount 179
Sircar J. N. 197
Sikandar Lodi 204
Sivaji Maharaj 237
Sixty four Kalas 240
Sivadas 282
Siddhirastu 64
Sivaswami Iyer Sir P. S. 123
Siva 125
Sikhism 167
Shaunaka Tantra 286
Sepoy Mutiny 156
Shad Darsanas 277
Smartas 146
Sila Bhedanam 383
Sankara Misra 388
Satya Putra 436
Sat Sree Akal 171
Soma, King of Plants 269
Social Organisation 94
Sootras 94
Spencer 396
Spirit 17
Sravis i 52
Sreesailm 93
Sree Kanta Datta 282
Sravana Belagola 130
Smritees 96
Culture of the 98
Smriti Chandrika 97
Smriti Rahu Mahodadhi 97
Stephen Hales 97
Study Courses of 10
Many Branches of 44
Subba Reddy, Dr. 324
Subjects, Division of 9
Sugandhee Karanam 343
Sukra Nesti 386

Suphism 163
 Sushena 124
 Sumāngala Vilasini 391
 Suradas 199
 Surgery 299
 Surgical Instruments 300
 Susruta Samhita 41
 Swami Naravana 196
 Sweta ketu Tantra 91
 Swetambara 207
 Synthetic Hindusim 144
 Systematic Botany 399
 Systems of Medicine
 Combination of 6

T

Tagore Devendra Nath 234
 Ravindra Nath 29
 Taitiriya Upanishad 15
 Takore Saheb of Gerdal 258
 Tamil Classi 77
 Tarporawala Mr. T. S. 179
 Tatakadeenam rakshanam 383
 Taxila 53

Glass Industry in, 245

Taxonomy 392
 Temples 73
 Terayyar 308
 Tevaram 182
 Theosophical Society 236
 Thirty two Sciences 240
 Tilak, Bal Gangadhar 237
 Time Hindu Calculation of 138

Tirumakudal 327
 Tirumular 182
 Town Planning 410
 Chief Objects of, 472
 Important items in, 474
 Treatment of Plants 379
 Tree Planting, importance
 of 368
 Tri Dhatus 91
 Trigunas 22
 Trigunateeta 22
 Tuglak mahamad 201
 Tulasidas 200

U

Udayana 391
 Ujjain 55
 Universe, evolution of 16
 Universal equation in
 Medicine 307
 Upanayanam, Ayurvedic 41
 Upanishads 16
 Culture of the, 88
 Upapurāṇams 137
 Upaskara 338
 Upavana Vinoda 397
 Ushanah Samhita 289
 Usman Committee 346
 Uttarakuru 56

V

Vachaspati Misra 206
 Vagbhata 120

Vaidika Yuga 258
Vaishnavas 146
Vaishnava Veda 185
Vaishnavism 190
Vaitarana Tantra 284
Vajasaneya Samhita 384
Vallabhachari
 Indrakantam 325
Vallabhacharya 194
Valmiki 19
Vanoushadha Darpana 364
Varna Dhar na 20
Varnasankara 225
Varnashrama Dharma 101
Vartika 60
Varuna 15
Vasishta 73
Vasishta Tantra 290
Vastu Purusha 413
Vastu V.dya 412
Vatsvayana 291
Vayupuranam 143
Vedangas 98
Vedas 87

Anatomical references in
 261
Ayurveda in 90
Daiva Vyapasraya
Chikitsa in 273
Drugs and their uses in 268
Hydrathetapy in, 271
Light and Chroma

therapy in, 270
List of drugs in, 270
Medicine as profession
 in, 274
Midwifery in, 272
Process of Metabolism
 in, 264
References to Bacteriology
 in 266
References to Tri Dhatus
 in 261
Sex differentiation in
Parasites in, 266
Spells and amulets, 273
Surgery in, 272
Yukti Vyapa sraya 267
Vedic Aryans India 87
Veerarajendra Deva 63
Veerasaiva 183
Veera solan 63
Vesali 57
Vidagadha Madhava 206
Videha 72
Videha Tantra 287
Vidyalankara Jayachanda 82
Vidyapati Udayana 206
Vidyapitah, Ali India
 Ayurveda 347
Vignanam 16
Vignaneawareeyam 97
Vijaya Lakshmi Pandit
 Mrs. 346

Vijayaratnasen Kaviraj 330

Vijayarashita 282

Vikramaditya 146

Vindhya 71

Virat 24

Vishnupurana 142

Viswakarma 414

Viswakarma Prakasika 437

Viswamitra 124

Viswamitra Samhita 283

Viswopakhyan 119

Vivekananda Swami 228

Vizianagaram 454

Vridha Jeevaka Tantra 289

Vrikshayurveda 328

Vyari Tantra 290

Vāsa 20

W

Wadia 71

Wars, Causes of 219

Watti 216

Wells H. G. 71

Wemakadaphisis 128

Williams, Monier 195

Wise Dr. 295

Woodroff Sir John 274

Writers of Historyed

Ptose 201

Y

Yagna Vākya 24

Yajuryeda 73

Yamunacharya 187

Yogaratanakara 326

Yudhishtira 19

Z

&arathushtra 171

Zoroastrianism 172

SUPPLEMENTARY

Allah 157

Dead Sea 178

Endgi 178

Esi 178

Esin 178

Chapter VIII

Civic Administration in Ancient India.

A

Adharma, the Foremost Cause of Disease 474 a
 Ahimsa 482
 Ahimsa (Nonviolence) 477
 Anglo Indian Administration 478 a
 Arthasastra 476 a
 Asoka's Empire 481
 Attendance in a Hospital

484-86.

B

Bhutadaya 447 A
 Bhuddistic Times 481
 Brahmanas 473 a
 British Indian Empire 481
 British Government 490

C

Charaka 490
 Civic Institutions 477 a
 Contagious Disease 475 a

D

Development of Medicine in Ashoka's Time 412
 Dharma or Righteous Conduct 475 a
 Diet and Medicine 486

E

Edicts 488
 Epidemic Diseases 475 A
 European 478

G

Ganapati Dev 488
 General Hospital 488
 Germ of Infection 475 A
 Govern
 Great Assemblies 479
 Guntur District 488
 Gurukula 476 A

H

Hindusthan 476 A
 Hospitals 476
 Hospitals in South India

Ideal of Peace and

Prosperity 474 A

Industrial Arts 477 A

Indian Medicine 488

India 481

Indian Arts 490

Instrument 486

K

Kautilya Arthasastra 482

L

**Learn Even from an
Enemy 488**

M

Manu 476 A

Mahatma Gandhi 482

Malakapuram 488

Maternity Hospital 488

Medicine—Development

of, in Medicines in

Modern Governments 480

Monier Williams 480

Modern Universities 490

Municipal Commission

477 A

Nurses 484

P

Pataliputra 482

Prosperity of

Proverbial Prosperity of

Ancient Hindusthan 480

Present System of

Government 490

R

Rama 481

S

Sir M. Viswaswariah 490

State 475 A

State Pharmacy 482

Susruta 490

Surgery 488

T

Takshasila 490

Tamil Kings 479

Temple of Venkateswara

488

The Three Agencies 475

Tirumakundal 488
Trade and Commerce 478

U

Utensils and Clothing 485

V

Vesti Netra (Enema tubes) 486
Veerachola Maharaja of

Choladesa 487

Veedhika or Fore-front 478 a

Village Associations under Chola Kings 479

Village the Unit of Government 479

Vincent Smith 480

W

Wars 475 a

Ayurveda Siksha
Volume I

Historical Background

17-9-1992